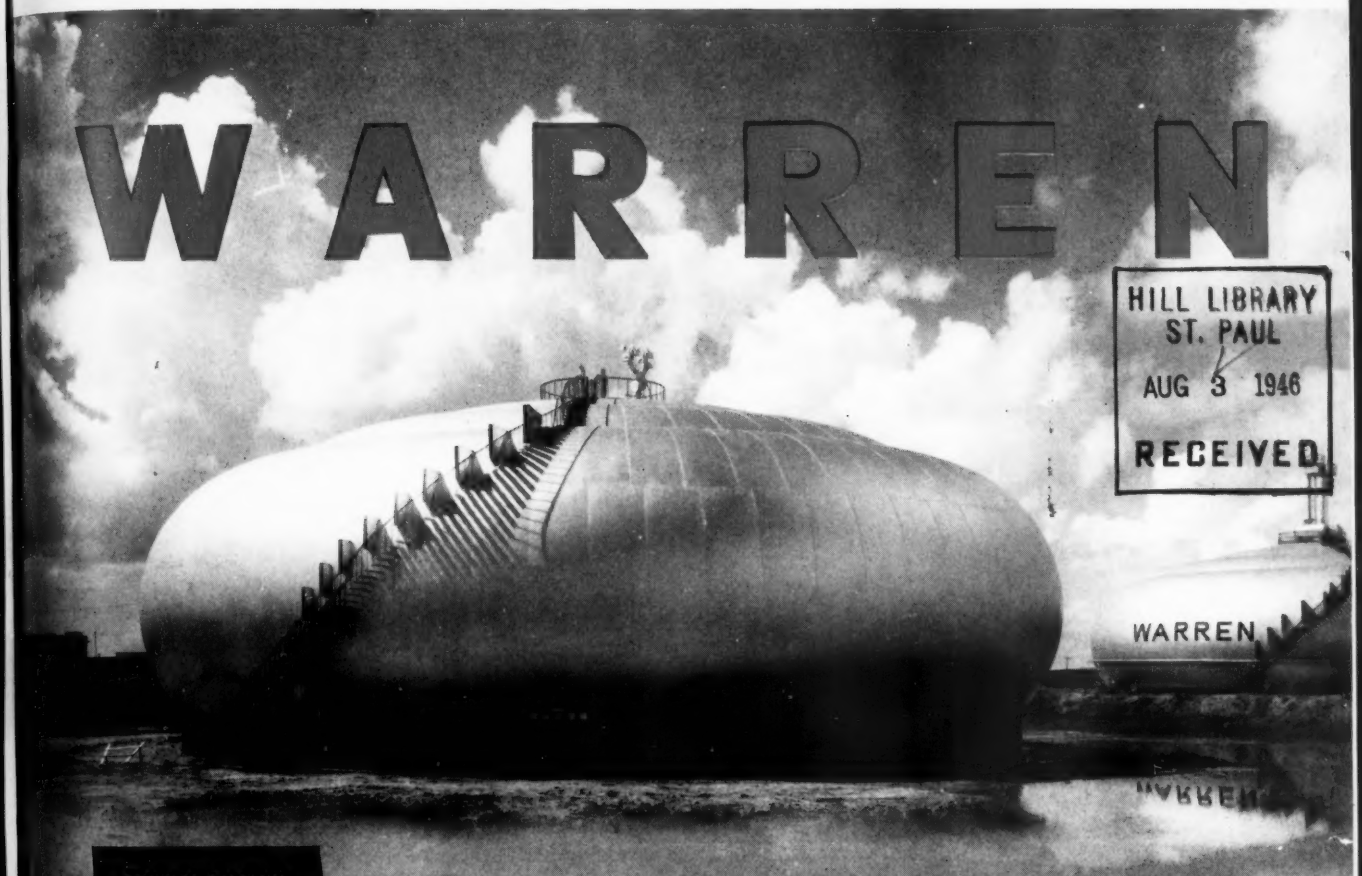
the OIL AND GAS JOURNAL



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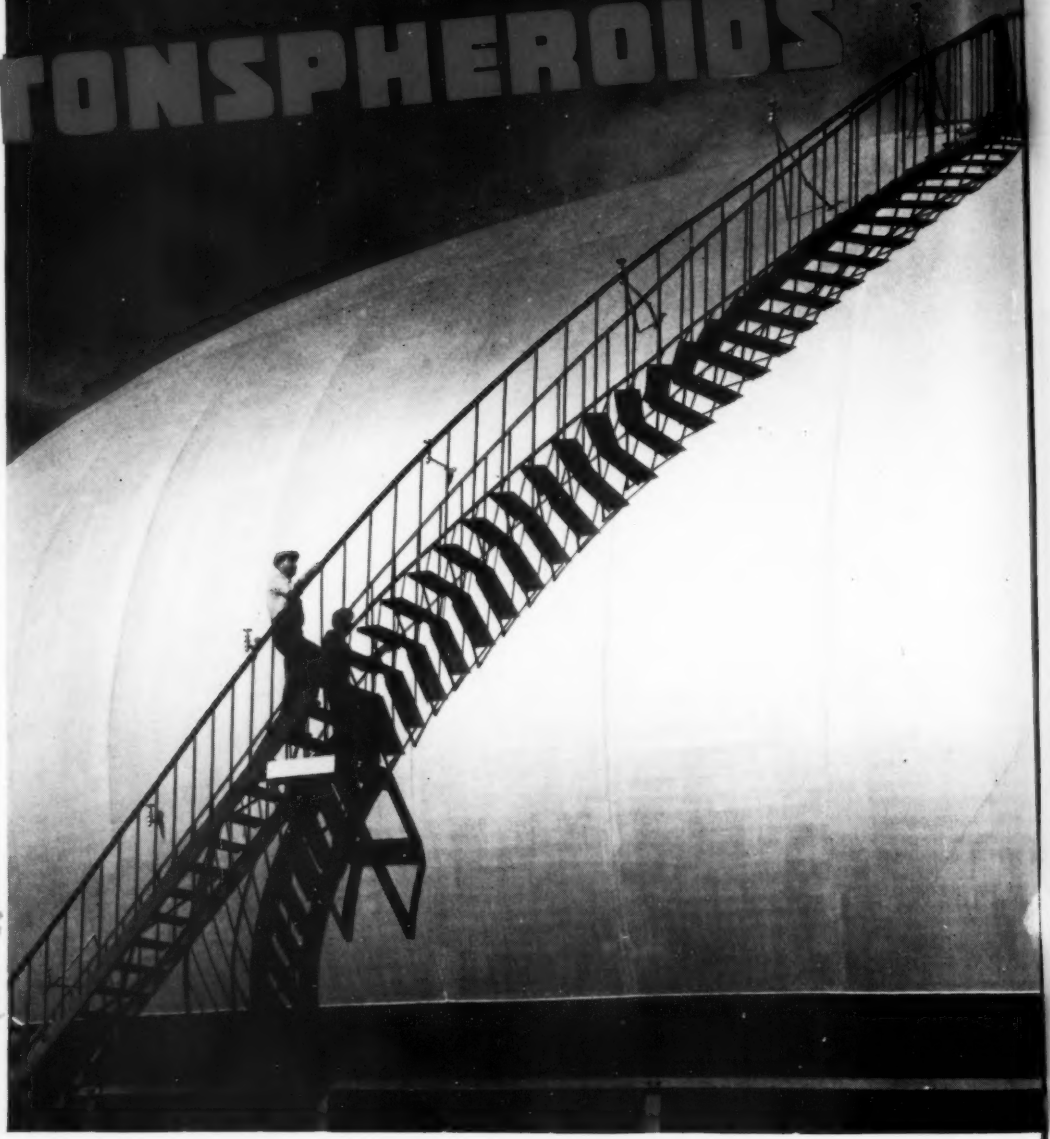
HORTONSPHEROIDS



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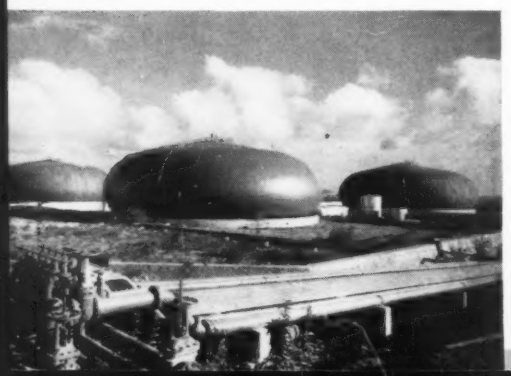

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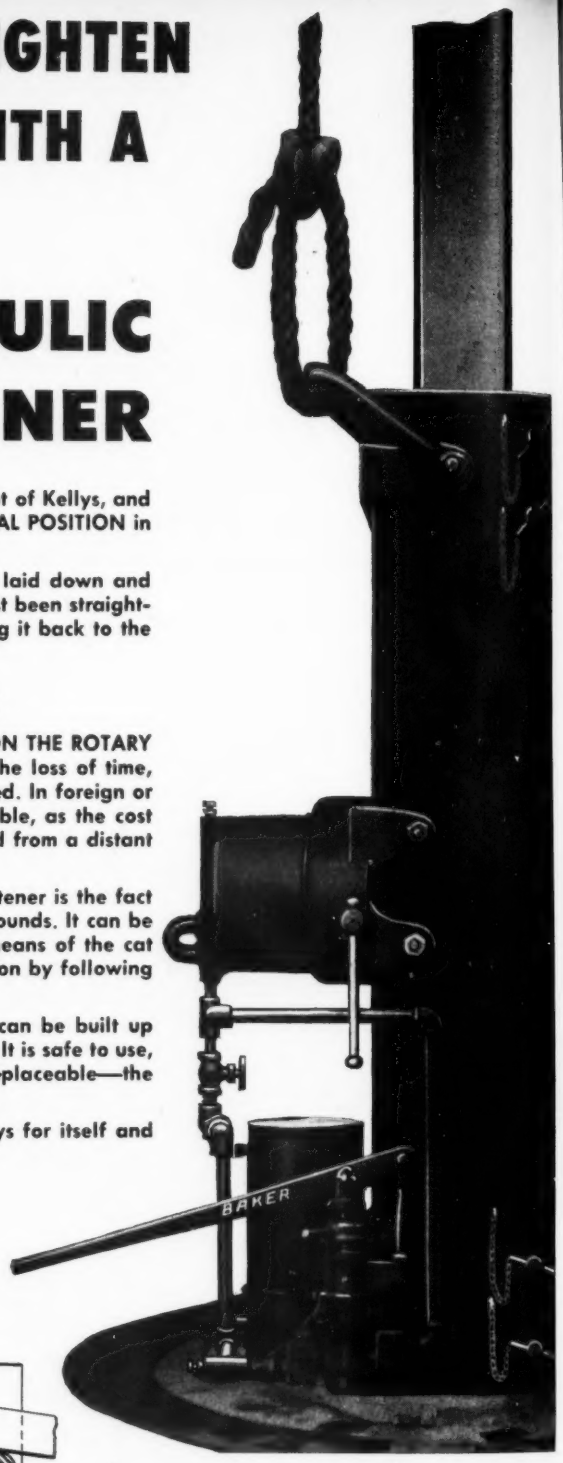
THE BEST WAY TO STRAIGHTEN KELLYS AND PIPE IS WITH A *BAKER* PORTABLE HYDRAULIC KELLY STRAIGHTENER



It is a SAFE, SIMPLE and INEXPENSIVE operation to take the kinks out of Kellys, and the bends out of pipe when they are hanging in a NORMAL VERTICAL POSITION in the derrick.

Probably more Kellys are bent during transportation, and in being laid down and picked up, than from any other cause. Frequently a Kelly that has just been straightened in a shop will again be bent during the process of transporting it back to the well, rolling it off the truck, and dragging it into the rig.

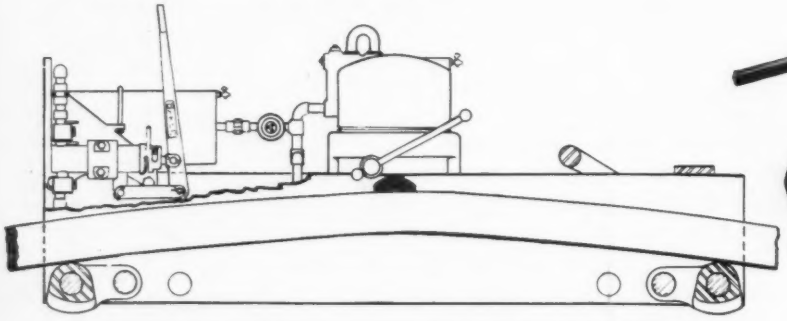
EASY TO STRAIGHTEN IN THE DERRICK

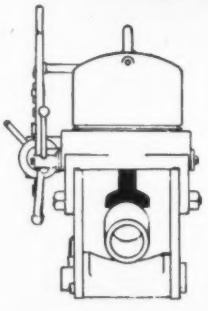
When the Baker Kelly Straightener is used, the job is done RIGHT ON THE ROTARY TABLE with the Kelly hanging in its normal position. The hazards, the loss of time, and the expense of transporting and handling are entirely eliminated. In foreign or isolated fields the Baker Kelly Straightener is considered indispensable, as the cost and the loss of time in transporting a bent Kelly or drill pipe to and from a distant shop are serious matters.

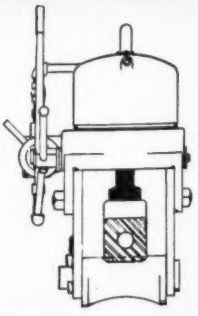
An important feature of the Baker Hydraulic Kelly and Pipe Straightener is the fact that it is completely portable, the entire unit weighing only 1,200 pounds. It can be transported readily on a small pick-up truck, or a trailer, and by means of the cat line is quickly set up on the rotary table ready for successful operation by following simple instructions.

Pressure sufficient to straighten 8¾" diameter Kellys or drill pipe can be built up without undue exertion, by manual operation of the hydraulic pump. It is safe to use, and the only parts subjected to wear are inexpensive and readily replaceable—the body and pump will last indefinitely.

Ask for details and prices on this efficient device which quickly pays for itself and then pays dividends for a long, long time.







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THE OIL AND GAS JOURNAL

Competition Returns

IT may seem contradictory to some, in the face of widespread increases in crude-oil and product prices, to state that last weekend competition returned to the petroleum industry, but future events will prove that to be the case. After 4½ years of government controls, followed by nearly a month of waiting to see if petroleum was to be included in a new OPA act, supply and demand are once more the determining factors in oil prices.

The first move with the ending of price controls was made by the suppliers. In the face of increased production costs, to which they had repeatedly called the attention of the pricing agency, with no adequate relief resulting, buyers have advanced crude-oil schedules throughout most of the country, the increases being in line with the findings and recommendations of the industry's crude-oil advisory committee.

Refiners have advanced their quotations to offset the greater raw-material outlays, with other adjustments to compensate in part for generally ascending manufacturing costs. These higher refinery quotations will be reflected in wholesale and consumer markets. All this is a logical and expected initial adjustment of a free market.

What happens from here on is not entirely a matter of costs. A market can be oversupplied, and when that occurs prices drop below the cost of production, as this industry well knows. General increases such as those announced the past few days mark the start of the return to competitive markets, but that is all.

Immediately competition, which has been quiescent for nearly a half decade, will become active again. There have been developments which normally would have been reflected in price levels and price relationship of products but which were frozen through government controls. These include major improvements in refining processing; the expansion of pipe lines, particularly product lines; the growth in production outside this country, water transportation, and new and old demands from consumers.

These are the competitive forces which will determine price relationships among gasoline, kerosene, fuel oil, and other products and among Mid-Continent, Middle West, Gulf Coast, and other refinery markets. Then will come the test of an overall balance in world supply and demand, which will determine the soundness of present crude-oil price schedules.

Competition should enable the petroleum industry to get its house in order within a few months with every indication that demands in this country and elsewhere will be satisfactory. The outstanding fact to keep in mind is that while free markets, on which this industry was built, offer the same opportunities in the future as in the past, there are also responsibilities and duties which now return to those in charge of operations.

Crude Prices Advance 25 Cents Except in Appalachian Area and California

A GENERAL price advance of about 25 cents per barrel on crude oil became effective Thursday morning, July 25, in all parts of the country except California and the Appalachian area in the east. In the Appalachian area, where the federal government subsidy is 75 cents, it appeared unlikely that any price advance would be made as long as the policy of OPA seemed to be one of reducing the subsidy by the amount of any price increase, since a price advance under such circumstances would not benefit the producers and royalty owners.

In California, the Standard Oil Co. of California, usually the price leader, is reported to have taken the attitude that no price increase is immediately necessary, because increased domestic demand for petroleum products had not yet overcome the sharp drop in war requirements, with the result that stocks of all oils have risen moderately. Current drilling activity has resulted in maintenance of current output at relatively high levels.

Contrary to general expectations, the first wave of price increases found very few exceptions to the flat average rise. It had been anticipated that there would be many revisions due to changes in refining values of various crudes, due to new refining processes, and that there would be other changes reflecting changed transportation conditions.

The major exception appeared to be in the Arkansas-Louisiana-Mississippi area, where Standard Oil Co. of New Jersey, Louisiana Division, posted many increases of 30 cents, 33 cents, and 37 cents, as well as the general 25-cent raise. The company announced that in addition to the general increase, it was making additional adjustments designed to recognize certain changes in crude values, transportation differentials, and other purchasing factors which had taken place over the past few years.

All purchasers wiped out the 3-cent differential in the Texas Panhandle by increasing prices 28 cents there. The only major change was in the black oil fields of the Rocky Mountain area, where most purchasers established new gravity scales in the range from 18° to 32° and above, replacing old flat prices. In general, this new gravity scale will result in an average 25-cent per barrel increase, but individual pools will be affected differently.

Changes by Companies

Humble Oil & Refining Co.—25 cents per barrel increase over previous posted prices, on all grades of crude oil, except Panhandle increased 28 cents; Stratton 30 cents; and Seeligson-Tijerina-Canales 20 cents.

Carter Oil Co.—25 cents per barrel increase over previous posted prices, on all grades of crude oil, except that previous flat prices on Elk Basin, Oregon Basin, and Frannie crudes in the Rocky Mountain are replaced by a gravity schedule commencing with $0.925 per barrel for 18-18.9°, with a 2½ cents per degree differential upwards to $1.275 for 32° and above.

Standard Oil Co. (Ind.).—25 cents per barrel increase over previous posted prices on all grades of crude oil, except that previous flat prices in black oil fields of Wyoming are replaced by a gravity schedule commencing with $0.925 per barrel for 18°-18.9°, with a 2½ cents per degree differential upwards to $1.275 for 32° and above.

Standard Oil Co. (N. J.)—33 cents per barrel increase on following Arkansas sour crudes: Atlanta, Buckner, Calhoun Limestone, Dorcheat-Macedonia, Magnolia, Patton, and Village limestones, and Schuler (Jones sand).

Thirty cents per barrel increase on following Arkansas-North Louisiana sweet crudes: Atlanta, Dorcheat-Macedonia, Magnolia, and Village sandstones; also DeSoto and Sabine Parishes, Fouke, Homer, Miller County (Garland City-Arkansas), Sugar Creek, Caddo, Cotton Valley, Haynesville, Rodessa, Shreveport (Cross Lake), and Sligo.

Twenty-five cents per barrel increase on the following North and Central Louisiana pools: Catahoula Lake, Cypress Bayou, Indian Bayou, Lake Larto, Little Creek, Olla, and South Olla.

Thirty-seven cents per barrel increase on following Central Louisiana and Mississippi pools: Hemphill, Holly Ridge, Lake St. John (all sands), Nebo, Cranfield, Fayette, Gwinville, and Mallalieu.

Twenty-five cents per barrel increase on following South Louisiana pools: Bayou Mallet, Hope Villa, Lewisburg, Rosedale, South Lewisburg, and Westwego.

Thirty cents per barrel increase on following Louisiana Coastal pools: Anse La Butte, Arnaudville, Bayou des Allemands, Bayou Perot, Bayou Sale, Branch, Bunkie, Choctaw, Darrow, Delta Farms, Eola, Golden Meadow, Iberia, Jeanerette, Krotz Springs, Lake Chicot, Liretto, Napoleonville, North Cankton, North Crowley, North Jeanerette, Pine Prairie, Port Allen, Port Barre, Potash, Raceland, Redell, Roanoke, St. James, St. Martinsville, Shuteston, South Crowley, South Jeanerette, University Deep, and Vacherle.

Twenty-five cents per barrel on University segregated Shallow Production.

Twenty-five cents per barrel on Mississippi heavy sour, Eucutta and Heidelberg.

Thirty cents per barrel on all Arkansas, North Louisiana, and Mississippi distillates, except 25 cents per barrel on Cotton Valley and Lisbon sweet distillates, 30 cents on Cotton Valley Holloway Sand crude.

Phillips Petroleum Co.—25 cents per barrel increase over previous posted prices in Oklahoma, Kansas, Texas, and Arkansas, except Texas Panhandle increased 28 cents.

Standard Oil Co. of Ohio—25 cents per barrel increase over previous posted prices in Oklahoma, Kansas, Michigan, Illinois, Indiana, and Kentucky. Twenty-five cents increase in Lima, Ohio, and 26 cents increase in Cleveland Chatham crude.

Atlantic Refining Co.—25 cents per barrel increase over previous posted prices at Barbers Hill, Refugio, Greta, Aransas, East Texas, West Texas-New Mexico, and Neale pool, Beauregard Parish, Louisiana.

Simrall Corp.—25 cents per barrel increase over previous posted prices in all Michigan fields where it purchases.

Continental Oil Co.—25 cents per barrel increase over previous posted prices in all fields where it purchases.

Col-Tex Refining Co.—25 cents per barrel increase over previous posted prices in Howard, Glasscock, Scurry, and Mitchell counties, Texas.

Sinclair Prairie Oil Co.—25 cents per barrel increase over previous posted prices in Oklahoma, Kansas, East Texas, North Central Texas, West Texas, and New Mexico. In South Texas, 25 cents per barrel increase, **except** in South Texas, former flat price of $1.45 posted for Alfred and Magnolia City, Tex., type crudes changed to gravity scale beginning at $1.33 for below 20° with 2-cent differential to $1.75 for 40° and above; and North Magnolia City and Clark Muil dropped from this list, and Tom Graham added. North Magnolia City changed from old flat price $1.45 to new gravity scale, $1.43 for below 20° with 2-cent differential to $1.85 for 40° and above. Piedras Pintas and East Peters added to Mirando type crude list with gravity scale from $1.38 for below 20°, with 2-cent differential to $1.85 for 40° and above.

Sinclair-Wyoming Oil Co.—25 cents per barrel increase over previous posted prices in Wyoming.

The Ohio Oil Co.—25 cents per barrel increase over previous posted prices on all grades of crude oil, **except** Stephens in Arkansas, increase 33 cents; and in Grass Creek Heavy, Garland, Byron, Oregon Basin, and Elk Basin Heavy, in Wyoming and Montana, where former flat prices are replaced by gravity schedule commencing with $0.925 per barrel for 18°-18.9°, with a 2½-cent per degree differential upwards to $1.275 for 32° and above.

Pure Oil Co.—25 cents per barrel increase over previous posted prices on all grades of crude oil, **except** Cabin Creek and Kelly in West Virginia.

Magnolia Petroleum Co.—25 cents per barrel increase over previous posted prices on all grades of crude oil, **except** Panhandle Texas up 28 cents; West Texas, Fullerton and Union (Clear Fork) (Siluro-Devonian) and Fullerton Ellenburger up 18 cents; South Texas, Seeligson up 20 cents; Rodessa and southern Louisiana up 30 cents.

Shell Oil Co., Inc.—25 cents per barrel increase over previous posted prices in Oklahoma, Kansas, and Illinois.

Pan American Production Co.—25 cents per barrel increase over previous posted prices in Hastings and South Houston; Gillock-Dickinson, League City, and Chocolate Bayou crude; Alta Loma; East Texas; Willamar. Flat price at Cayuga increased 27 cents; Quitman on gravity scale from $1.13 for below 20°, with 2-cent differential to $1.55 for 40° and above.

Gulf Refining Co.—25 cents per barrel increase over previous postings, except Texas Panhandle increased 28 cents, and flat price at Baxterville, Mississippi set at $1.11.

Mid-Continent Gasoline Up 1 Cent; Other Products Advance

by Dahl M. Duff

PETROLEUM products prices moved sharply upward early this week in an almost-simultaneous reaction to the 25-cent crude increase.

The important gasoline market was expected to stabilize later in the week at around 7 cents for regular grade on the Group 3 basis. Distillate burning oils were due to take advances ranging up to ½ cent, and residual at least 15 cents.

The refinery market was unsettled early in the week. Suppliers preferred to wait until full amount of the increases had materialized before making sizeable offerings. Some sellers withdrew quotations entirely until the situation clarified.

Tank-wagon gasoline prices of Standard Oil Co. (Ind.) — market leader in 11 midwestern states—were advanced by slightly more than 1 cent Tuesday. Continental Oil Co. also announced a similar increase in tank-wagon prices. Standard Oil Co. of Ohio boosted both tank-car and tank-wagon prices effective Saturday, July 27.

Natural gasoline also climbed to a higher level in the wake of the rising motor fuel market. The 26-70 grade was quoted at 3¾ cents in Oklahoma and 3¼ cents in North Texas—both up ¼ cent.

Refiners were jubilant over the rising market, even though most of the products increases will go to offsetting the 25-cent crude increase. There was some talk of attempting to reestablish the old 1-cent differential formerly existing between premium and regular grades. This spread dropped to ¾ cents during the war at the time of a government-ordered octane limitation.

Principal published quotation for gasoline in the Mid-Continent area stood at 6½-7 cents Monday, but market sources were unanimous in predicting that the low will rise to 7 cents. One refiner reported spot sales Monday at 7 cents. A marketer said he found no material offered under 7 cents and that suppliers appeared indifferent to selling in a fast-advancing market. Gasoline demand continued heavy, and major refiners were still attempting to buy in the open market for supplies to meet contractual obligations.

In the New York area, Socony-Vacuum Oil Co., Inc., hiked its gasoline and solvent prices 0.9 cents per gallon effective July 27. The increase affected all methods of delivery in the New York and New England territory. Suppliers on the Gulf Coast were quoting regular at around 6½ cents, premium at 7⅛ cents.

An ultimate advance of a full ½ cent in kerosene and distillate burning oils was accepted. Kerosene in the Mid-Continent area was quoted at 5¼ to 5½ early in the week, and No. 2 distillate at 4⅜ to 4⅝ cents. These lows represented an immediate ¼ cent gain over previously prevailing quotations.

Coupled with the tank-wagon gasoline price increase of Indiana Standard was an announcement of a ½ cent boost in kerosene and distillate fuel prices. Socony-Vacuum said its prices of these products will be raised 0.7 cents. On the Gulf Coast, kerosene was offered at 5¼ cents—⅝ cent above the previous figure. Gulf Coast quotation for No. 2 was 4⅞ cents against 4¼ cents previously.

Residual Also Moves Up

The status of residual fuel oil was in doubt. Residual prices began moving upward early this week but where they would finally crystallize was uncertain. The position of residual—the industry's much sought-after by-product—has been the subject of much discussion since war's end.

Published price for Mid-Continent residual Monday was $1.26 to $1.33 per barrel against $1.18 previously. Some companies were known to be considering hiking their spot residual price 15 cents, others were studying a possible 30-cent advance. Some Gulf Coast suppliers were asking $1.55—29 cents over previous quotations.

Socony-Vacuum in its New York announcement said residual prices will be upped 30 cents a barrel. The product was said to be in demand in New York harbor, but one market source expected it to ease, since a 30-cent increase would force some users with easily convertible equipment, back to coal.

Residual has been in heavy demand on the Gulf, due partly to heavy military and shipping requirements. In the interior, however, a more plentiful trend has been apparent in recent weeks. Railroads have been buying under residual contract at $1.05. Contracts calling for changes of 60 per cent of that of crude would give $1.20.

The rise in products prices was general throughout the country except in California where crude also was still at its old levels. They were the first since late last winter when Office of Price Administration officials authorized a temporary ½ cent increase in burning oils and later followed it with a permanent order. Residual ceilings were advanced 21 cents a barrel at the same time in most of the country.

An official of Standard Oil Co. (N. J.) said "reasonable increases" in crude and products prices will have almost no appreciable effect on the cost of living for the average person." Like other industry spokesmen, he pointed out the crude reserves of the nation were under heavy pressure during the war and said it is now necessary to find new oil. "Not only have discovery costs drastically increased but the current costs of geting the oil out of the ground, including labor and materials cost, have risen sharply," he said.

"Such an increase (25 cents per barrel for crude) would bring about a rise in the price of gasoline of perhaps a fraction of a cent, or possibly a cent per gallon. In other words, the average motorist would find his gasoline bill up about 15 cents a week. And even this increase would be partly compensated for by the higher quality which has resulted from refining developments during the war years. In terms of household heating oil, the increased cost to the average home owner would be perhaps ½ to ¾ cent a gallon, or about 20 cents a week over the year."

Standard of Indiana, in announcing its tank-wagon increases, said they were the result of the recent crude advances and a simultaneous correction on account of changed freight rates. The company was referring to recent action of the Interstate Commerce Commission raising freight rates 6 per cent throughout the country except in the so-called official territory east of the Mississippi and North of the Ohio and Potomac rivers where the increase was 11 per cent.

"Since the last adjustment of product prices in 1941," Indiana Standard said, "operating costs also have advanced more than a third in the producing, refining, transportation, and marketing phases of the petroleum industry. A total increase of 35 cents a barrel in the cost of crude is . . . back of the rise in product prices."

Magnetometer Report Available

WASHINGTON.—Thirty-seven reports on magnetic airborne submarine detectors, including the magnetometer found useful for peacetime aerial prospecting for minerals and oil, are now on sale by the office of technical services, Department of Commerce.

Oil Freed of Controls Indefinitely; Equipment Ceilings Lifted

by Henry D. Ralph

WASHINGTON. — Under the new price control law signed by President Truman July 25, crude oil and all petroleum products are entirely free from price control for an indefinite period.

Whether any of the former ceilings will ever be restored will depend on the future findings of the new Price Decontrol Board. The law purports to set forth standards for the reimposition of oil price controls, but the language is so vague that the PDB may interpret it in almost any fashion it desires.

Price controls on petroleum drilling and producing equipment were suspended along with ceilings on an extensive list of other industrial machinery and equipment in the first batch of orders announced by the Office of Price Administration after it was revived by the new law.

OPA said this action was taken under the former law and its announcement had been under consideration when the act expired June 30. Technically, the suspension could be revoked and controls reimposed, but it is more likely that the suspension will be converted into a complete decontrol under the operation of the new law.

The exact status of the stripper-well subsidy was vague early this week. The new price control law in general provides continued subsidies, even though petroleum remains decontrolled.

What officials of OPA and the Reconstruction Finance Corp. would do in view of the almost-general crude price advances, was uncertain. The law appears to authorize them either to reduce subsidies by the amount of the advances or to continue it at former rates regardless of present posted prices.

There are two sets of standards applicable to recontrol of oil. The first says that the price administrator, with the advance consent in writing of the PDB, shall reestablish such maximum prices as are consistent with the applicable provisions of the law as in his judgment may be necessary to effectuate the purposes of the act whenever, after a reasonable test period, it appears that the supply is no longer consistent with the applicable decontrol standard. The supply shall be deemed inconsistent with the applicable decontrol standard in any case where the price has risen to an unreasonable and inflationary level.

The other set of so-called standards puts the recontrol initiative in the PDB at any time after August 20, 1946, if it finds: (1) that the price has risen unreasonably above a price equal to the lawful maximum price in effect on June 30 plus the subsidy payable as of June 29; and (2) that such commodity is in short supply and that its regulation is practicable and enforceable; and (3) that the public interest will be served by such regulation.

The law contains no definitions of "unreasonable price increase," "short supply," nor "public interest," so the decontrol board can make its own rules. However, oil industry representatives in Washington are not particularly worried about recontrol, foreseeing no possibility that oil will be in short supply or that the price will rise unreasonably within any common-sense meaning of these terms.

Higher Costs Justify Increases

The price increases announced during the first few days of statutory decontrol of oil have been only those which the industry and many government officials have been seeking for years and which can easily be justified on the basis of increased costs. In fact, it is quite possible that if OPA attempts to set new price ceilings on oil it will be forced to set them at least as high as the newly posted prices in order to comply with the general pricing standards for all producers and manufacturers set forth in other sections of the act.

No official reaction was noted in Washington to the announcement that crude-oil prices were being advanced in many fields, with compensatory price increases on products.

Oil-industry representatives had no apprehension that OPA and the decontrol board might become alarmed over crude price increases of around 25 cents per barrel, since an increase of that amount was proposed by some purchasers in 1941 just before the price was frozen and an increase of this magnitude has been recommended by the Interior Department and many Congressional committees at various times during the war. A 25-cent increase was generally predicted during the Congressional debate on decontrol of petroleum. If oil prices should increase considerably more than this initial advance the decontrol board might start action, but the board is expected to be so busy for several weeks that it will pay little attention to petroleum unless consumers make violent protests against higher product prices.

An interesting fact is that the national average price of crude oil on June 30 was about $1.33 per barrel and the 25-cent advance is almost exactly an 18.5 per cent increase. In view of the fact that the refinery strike was settled last fall for a wage increase of 18.5 per cent and this figure became the pattern for other wage increases allowed by the Government, it is difficult to see how the administration in good grace could object to this percentage rise in oil prices.

President Truman moved promptly to create the new Price Decontrol Board, and sent to the Senate for confirmation the names of Roy L. Thompson, president of the Federal Land Bank of New Orleans; Daniel W. Bell, formerly Undersecretary of the Treasury and now president of the American Security & Trust Co. of Washington; and George H. Mead, chairman of the Mead Pulp & Paper Co. of Dayton, Ohio. Until last year Bell was a career government employe and won much acclaim for his ability and knowledge of financial matters in various treasury posts. Mead has been in the paper business all his life but has spent much time in Washington during the past decade as an industry member on various boards and advisory committees.

Bahamas Exploration to Use Latest Techniques

Using a diving bell for underwater gravimeter observations and radar for position plotting, an area beneath the surface of 2,000 sq. mi. of water in the northwestern Bahamas (West Indies) will be explored by the Standard Oil Co. (Bahamas) Lt., a subsidiary of Standard Oil Co. (N. J.), in the shallow waters north of Grand Bahama Island. The area to be explored lies east of West Palm Beach, Fla., and east of the relatively deep water of the Florida straits. In most places it is covered with less than 20 ft. of water.

Operations will be based on a 112-ft. ship, the Stanba, the first vessel ever equipped with radar for the purpose of oil exploration. Radar targets 50 ft. high will be set up at strategic points in the exploration area. (For an illustration of how diving bells are used in gravimeter work, see The Oil and Gas Journal, June 20, page 98. For an explanation of the workings of radar, see The Oil and Gas Journal, July 6, page 74).

THIS 1946 WEEK

S M T W T F S

PRICES—Increases in crude postings begin simultaneously with final approval of OPA revival bill. . . . Measure specifies continued free market for petroleum. . . . Oil ceilings cannot be reimposed unless new board makes affirmative finding they are necessary. . . ¶Humble leads off with first crude-increase announcement. . . . Crude prices hiked generally 25 cents except in California and Pennsylvania. . . . Some minor adjustments made in postings to reflect transportation, refining changes since prices were frozen 4 1/2 years ago. . . . ¶Products move upward behind crude. . . . Mid-Continent gasoline up 1 cent . . . distillate burning oils rise 1/2 cent . . . Natural gasoline also rises 1/4 cent under stimulus of ascending motor fuel market. . . . Standard of Indiana announces tank-wagon increases, including slightly more than a cent for gasoline to compensate for crude rise and for higher freight rates. . . ¶Washington officials appear little disturbed by rising petroleum prices. . . . ¶First orders of revived OPA include suspension on petroleum drilling and producing equipment. . . . Suspension expected to lead to full decontrol later. . . . ¶New OPA law provides stripper subsidies but amount to be paid in view of crude increases is in question. . . . OPA, RFC officials discussing subject. . . . Full subsidy expected for July production. . . .

INTERNATIONAL—Mexico asks bids from Mexican citizens for exploration and development of 75,000-acre tract on Mexico's West Coast. . . . Offer is first to private interests since expropriation in 1938. . . . ¶Austria nationalizes Zisterdorf oil fields with indications it will attempt to make adequate compensation to private owners. . . . Russia operating the fields warns against the move, Austria considers appealing to United Nations. . . . ¶Shell plans new refinery on Maura Island in British North Borneo. . . ¶Exploration work, completion of wildcat indicates new field will be opened on west coast of Sinai Peninsula. . . . Anglo-Egyptian Oilfileds, Ltd., developing the area with Socony-Vacuum. . . . Second well now being drilled. . . .

PRODUCTION—Louisiana, Oklahoma up August crude allowables. . . . Oklahoma production set at 387,220 bbl. daily, Louisiana at 429,405 bbl. daily. . . . Kansas unchanged at 270,000 bbl. daily. . . . ¶U. S. crude production in July 27 week drops 19,340 bbl. to total of 4,928,450 bbl. daily. . . . California down 15,000 bbl. daily. . . . Texas output unchanged. . . . ¶Weekly well completions again mount. . . . Total for July 27 week at 598 against 576 previous week and 536 for July 13 week. . . .

LEGISLATION—Congress passes tidelands resolution after filibuster threat fails to materialize. . . . Bill goes to White House with recommendations from administration leaders that it be vetoed. . . . ¶Congress completes action on public-lands leasing bill and sent it to President. . . . Department of Interior appears satisfied by three amendments, none changing provision for flat 12 1/2 per cent royalty. . . .

TRANSPORTATION—WAA officials in Washington prepare to open bids this week on big-inch and little big-inch pipe lines. . . . Situation closely watched by industry. . . . Some offers known to contemplate gas-transmission use, others oil shipment. . . . ¶Government offers Plantation pipe line extension from Greensboro, N. C., to Richmond, Va., for sale or lease. . . . Line is 179 miles long, 8 in. in diameter. . . . ¶Southern California Gas Co. begins installation of plastic pipe because of steel pipe shortage. . . . Company plans to use some 100,000 ft. of plastic pipe in East Los Angeles and the Pasadena areas. . . . ¶Maritime Commission untangles administrative regulations and begins sale of surplus U. S. vessels. . . . Two T-2 tankers sold to Union Oil Co. of California. . . .

NATURAL GAS—Washington hearing in FPC's lengthy investigation of the natural-gas industry nears close. . . . Commission listens with interest to E. Buddrus, Panhandle Eastern Pipe Line president, and R. H. Hargrove, vice president of United Gas Pipe Line. . . . Both executives ask that the commission appreciate problems faced by the gas industry. . . . ¶FPC sets for August 6 hearing on three gas-company expansion programs involving more than $100,000,000. . . . Companies are Panhandle Eastern Pipe Line, Michigan Gas Storage, and Michigan-Wisconsin Pipe Line. . . .

Coastal wells such as these in California's Santa Barbara area are involved in the tidelands resolution which passed the House by a vote of 188 to 66 and was sent to the White House this week for the President's signature. If approved—which is considered unlikely—the bill as now passed by Congress will lift a cloud that has been hovering over titles to offshore drilling as well as harbor improvements by coastal states. The bill was unsuccessfully opposed by administration leaders in Congress who pleaded with members to allow the issue to be decided by the United States Supreme Court which now has before it the Federal Government's suit against the State of California to establish title. The contested area is that part of the offshore lands extending from the high-tide mark several miles out into the ocean. California, in fighting the Supreme Court case, claimed the state's right to the tidelands has been established in more than 50 previous cases

FPC Urged to Consider Gas Industry's Practical Operating Problems

WASHINGTON.—The Natural-Gas Industry Committee has completed its presentation before the Federal Power Commission, and the lengthy investigation is winding up this week with scattered bits of testimony from witnesses who were unable to appear at earlier sessions.

Of all the gas industry men who appeared, the commission was most interested in two operating executives who were present as individuals rather than as expert witnesses for the committee—E. Buddrus, president of Panhandle Eastern Pipe Line Co., and R. H. Hargrove, vice president of United Gas Pipe Line Co. Both of them gave personal views as to how the natural-gas act should be interpreted and how the FPC should apply it, and their appearances lead to some interesting colloquies with members of the commission.

The two pipe-line officials sought, in general, a sort of rule-of-thumb administration, free from legal technicalities and the details common to most public utility rate-making procedures. They both asked that the commission appreciate the practical operating problems facing gas-transmission companies and that it adopt a long-range view of the industry instead of finding day-by-day solutions to specific matters before it.

They dwelt particularly on the problem of a gas line in developing new reserves because of the commission's limit on the earnings which a pipe line company may make on its investment. While not objecting to a limit on earnings on capital invested in transmission lines, they explained that when the rule is applied to production and gathering facilities and to exploration and development work it hampers the lines in seeking new reserves and takes away the reward for expensive geophysical and exploratory efforts. The fear that this profit limitation may be applied to other companies who might sell gas to transmission lines has a tendency to prevent the sale of gas to transmission companies, they said, and they asked that transmission companies be allowed to figure the value of their own gas at the field price obtained by other producers.

The necessity of serving industrial customers was another point stressed by the two pipe-line officials, who explained that such sales permit operating the lines at full capacity during off-peak periods with the result that the price of gas to residential and commercial users is less than if industrial sales were not permitted. Special studies on industrial sales were also given by two of the expert witnesses presented for the Natural Gas Industry Committee by E. Holley Poe and Associates—H. Zinder and H. Barry Flagg.

Buddrus, on cross-examination, declared, "The results obtained concerning the production value of gas have upset the well established methods used by the industry for determining values and in my considered judgement the present rate-making yardstick should be abandoned.

"One result of the rate cases conducted by the commission," he continued, "has been to completely nullify reward for the foresight and good business judgement of those pipe lines producing a portion or all of the gas handled by them; that is, the owners of gas-producing property who had the courage to risk their capital to discover gas or to purchase leases where gas was already being produced and then subsequently to induce capital to invest millions of dollars in seeking and finding a market for gas were abruptly told by the commission that they could earn only 6½ per cent on the depreciated original cost of their production property."

Pipe-Line Restrictions Deplored

Commenting upon the policy often employed by FPC of attaching restrictions to approval of pipe-line facilities, Buddrus said, "Restricting the use of any portion of any pipe line capacity can only result in ultimately higher prices for natural gas sold from the pipe line."

Answering a question by Commissioner Wimberly, Buddrus said he did not believe the pipe-line companies would object to an increase in the field price of gas because they realized the more the producers get the more incentive there would be for them to engage in additional exploration, and therefore, more gas will be available.

Hargrove urged the commission to join with the natural-gas industry management in seeking congressional clarification of several important issues which have developed between these two groups as a result of FPC's administration of the natural-gas act.

"The issues I refer to particularly," said Hargrove, "are (1) the extent to which 'production and gathering' are excluded from the jurisdiction of the commission; (2) the extent to which direct sales are excluded from the jurisdiction of the commission; (3) restriction of use of gas by application of the so-called 'superior end use' theory."

He contended that if sales made by producers and gatherers were regulated by FPC "perhaps the most disastrous and immediate result would be the discontinuance by large oil companies and other producers, as soon as contractual obligations would permit, of further sales to natural-gas companies."

Buddrus and Tom McGrath, counsel for the coal interests, discussed their opposing views on end-use restrictions, and also their opposing views as to the latitude the coal and railroad interests should be allowed in the matter of intervening. At one point Buddrus said he was afraid the gas industry was asleep when the amendment to the natural-gas act was passed in 1942, but he also felt the industry should take steps to get these amendments eliminated.

Leland Richardson, counsel for the state of Louisiana, asked Buddrus what rights he believed the producing states have concerning the piping of their gas to other states. Buddrus said in his opinion as long as the pipe line company complies with the state laws he believed it can send gas to any markets it wants to.

Charles R. Bellamy, who appeared on behalf of the Natural Gas Industry Committee, declared that public interest demands that industry use the lowest cost fuel for each of its various operations, and added that to arbitrarily ban the most economical fuel, whatever it may be, from any particular operation, "would simply increase the industrial cost which the general public would have to bear."

Flagg presented an analysis of the increased costs which would be occasioned if large-scale steam generation plants were compelled to convert from natural gas to coal. "There has been no general information available concerning the number of customers using natural gas for steam generation, the amount of natural gas they consume, the cost of the gas to them, or the additional costs to which they would be subjected, under present conditions, if they were, for any reason, to convert their operations to another fuel," Flagg explained.

International

WORLD-WIDE OIL DEVELOPMENTS

Pogue Places Future Oil Finds At 490 Billion Barrels

NEW YORK.—Stating that the countries of the Middle East—Iran, Iraq, Saudi Arabia, Kuwait, Bahrein and Qatar—will be of outstanding importance in the world oil industry of the future, Joseph E. Pogue, vice president of Chase National Bank, estimates that future Middle East discoveries will reach 150 billion barrels. Russia's future discoveries are put at 100 billion barrels.

These estimates are made by Pogue in an article published in the summer issue of the "Yale Review." Pogue, an eminent authority on oil, gives the following estimates on oil discoveries in other parts of the world:

ESTIMATED FUTURE WORLD OIL DISCOVERIES
(In billions of barrels)

United States	50
Caribbean area	65
Rest of Western Hemisphere	30
Total Western Hemisphere	145
Soviet Union	100
Rest of Europe	8
Middle East	150
Far East (Southwest Pacific)	58
Rest of Eastern Hemisphere	29
Total Eastern Hemisphere	345
Grand total, world	490

"If compared with the list of proved reserves," (see table below) Pogue says, "this tabulation indicates that the Soviet Union has vast latent oil resources within its confines; that the United States, which has discovered to date about 50 billion barrels, has about an equal volume yet to come; that the Middle East has extraordinarily large potentialities; and that many other countries have prospects of great importance." Pogue further explains:

"Both as to proven reserves and discovery expectations, the countries of the Middle East contiguous to the Persian Gulf—Iran, Iraq, Saudi Arabia, Kuwait, Bahrein and Qatar—will be of outstanding importance in the world oil industry of the future.

"The Soviet Union's large oil potential should remove from its national policy any urgency to enter into foreign oil production while its centralized form of government interposes difficulties not present in the case of nations operating under a private enterprise system. The proximity of the great deposits of the Middle East, however, doubtless constitutes a temptation to Soviet leaders imperialistically inclined or fearful of the presence of other powers."

Before giving "proved reserve" figures, Pogue emphasizes that "any attempt to relate proved reserves to current production and calculate the future life in terms of years' supply is fallacious and misleading." The figures follow:

ESTIMATED PROVED OIL RESERVES
(In billions of barrels)

United States	21.0
Caribbean area	9.0
Rest of Western Hemisphere	0.5
Total Western Hemisphere	30.5
Soviet Union	6.0
Rest of Europe	0.8
Middle East	27.0
Far East (Southwest Pacific)	1.0
Rest of Eastern Hemisphere	0.5
Total Eastern Hemisphere	35.3
Grand total, world	65.8

Commenting on the "proved reserves," Pogue states:

"Of the 65.8 billion barrels of proved oil reserves as presently estimated for the world, 44.8 billion barrels, or 68 per cent, are in foreign countries. On the basis of the interests conducting the producing operations, this foreign reserve is under development as follows: by United States nationals, 40.1 per cent; by British-Dutch nationals, 39.9 per cent; by the Soviet Union, 13.4 per cent; by all others, 6.6 per cent. Thus it is evident that our nationals have already attained a position of great importance in world oil."

And in view of this country's largest per capita consumption of oil, coupled with the fact that much of our industrial progress is dependent upon oil, "the United States has a special interest in oil and, therefore, should take the lead in formulating policies and encouraging instrumentalities conducive to the development in the world," Pogue believes.

Moreover, Pogue states that demand in foreign countries will probably display a particularly sharp upward trend, with petroleum operations showing marked activity for years to come.

Austria Seeks to Effect Zisterdorf Nationalization

VIENNA.—The Zisterdorf oil fields in the Soviet occupation zone of Austria are among the properties nationalized by the Austrian Parliament in a law passed July 26—despite the unveiled threats of the Russian Government that such a move would not be in keeping with the Potsdam Agreement.

In accordance with the Allied Council terms, this law must come before the Allied members, but as no nonconstitutional Austrian law can be disallowed by the Council, except by unanimous vote, the nationalization law becomes effective 31 days after it is presented to the council.

However, the fact remains that the Zisterdorf oil fields, as well as other property in the Russian-occupied zone, are still in Russian hands and are still being operated by armed forces. Realizing this, the Austrian Government's next step will be to have the entire matter come before the United Nations. A resolution has already been passed asking the United Nations to receive an Austrian delegation.

Representatives of British and United States oil companies which have legal rights to Zisterdorf properties indicate that the Austrian Government probably will effect a sincere effort to make adequate compensa-

tion for the properties — after the Russians leave.

Meanwhile, reports from Washington indicate that some action may be taken in Russia's policy of stripping Hungary of food and industrial machinery. At any rate, the U. S. State Department has again formally protested to the Russian Government regarding the Soviet methods in Hungary and asking the Russians to join the United States and Great Britain to stop "the present economic disintegration" of that country.

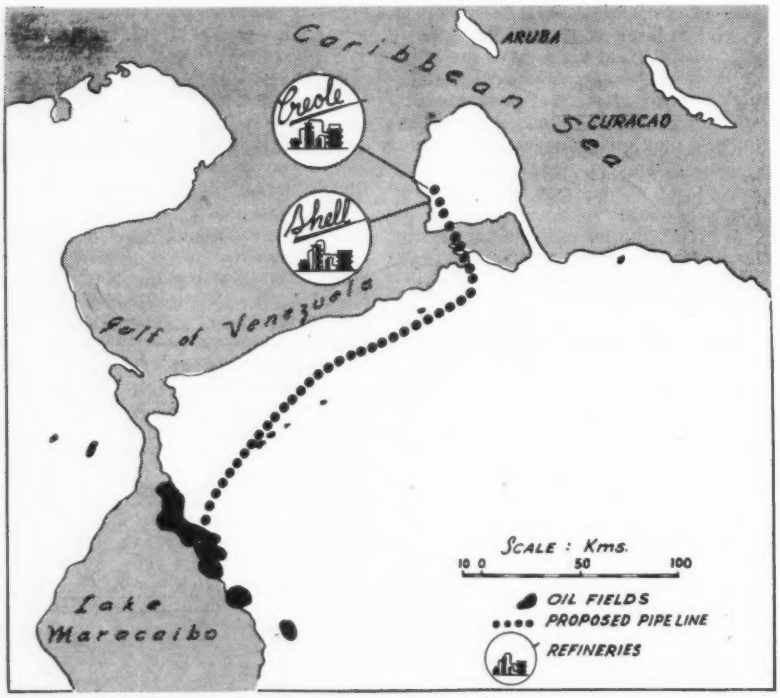
Early this spring, the U. S. State Department told Russia that all Soviet personnel working in the Hungarian - American oil (Lispe) fields must be withdrawn and the management returned to American owners. Failure to do so, the State Department said, would be considered a violation of the armistice. To date, the Soviets have not sent a satisfactory reply to these U. S. Government demands. The Standard Oil Co. (N. J.) has extensive holdings in the Lispe field where the Russians are now overproducing the property by allowing an excessive waste of gas during the recovery of oil.

First Quarter Iran Output Totals 33,488,000 Bbl.

LONDON.—Total crude oil production for the first 3 months of 1946 in Iran amounted to 4,784,000 tons (33,488,000 bbl.), according to officials here of Anglo-Iranian Oil Co., Ltd., the only company operating in Iran. No comparable figures are available for the first 3 months of 1945. However, total Iranian production from January 31 to October 31, 1945, was 13,621,576 tons (95,351,032 bbl.)

Total Iranian production for the 12 months of 1945 has been corrected to 16,839,490 tons (117,876,430 bbl.), compared with 1944's total of 13,274,243 tons (92,919,701 bbl.) Production for March 1946 was 1,717,000 tons (12,019,000 bbl.)

Anglo-Iranian's 1945 crude production in its United Kingdom oil fields totaled 71,542 tons (500,794 bbl.), compared with the 1944 production of 94,570 tons (661,990 bbl.)



This map shows the location of the new $65,000,000 refinery which Creole Petroleum announced last week it will construct at Amuay Bay on the Paraguana Peninsula in Venezuela. The site is near that of the 40,000-bbl. refinery now under construction by Shell Co. of Venezuela. Ltd. W. J. Connelly, manager of Creole's manufacturing division, disclosed that the plant will have a capacity of 60,000 bbl. per day and will produce all refined products. Extensive housing facilities also will be built. Contracts have not yet been let, and negotiations are still under way for the land on Paraguana. Creole, the world's largest producing company, is a subsidiary of Standard Oil Co. (N. J.) Also shown on the map is the general route of the proposed 26-in. pipe line which would move crude from the Lake Maracaibo area to Paraguana. This line reportedly is considered as a cooperative enterprise of Creole and other operators

YPFB Program Unchanged Despite Political Upheaval

NEW YORK.—Despite the political upheaval and change of presidents in Bolivia, that country's $17,000,000 oil-development program will be carried out as planned, according to Jorge T. Lavadenz, president of Yacimientos Petroliferos Fiscales Bolivianos, who received a cable last week from his La Paz office to proceed with all negotiations. YPFB is the Bolivian Government Oil Fields organization.

In line with these developments, Lavadenz announced that YPFB's drilling contract has been let to Victor Ekholm of the South American Oil Development Corp. For the last 3 years Ekholm has been YPFB's chief geologist.

Meanwhile, it was learned that the Bolivian - Brazilian Mixed Commission—an organization which operates entirely apart from YPFB—has elected Jorge Munoz Reyes as its president and expects to initiate a wildcatting program in the near future. (Details of Bolivia's oil plans were published in The Oil & Gas Journal, July 27, page 128).

Long Beach Firm to Drill Arabian American Wells

LOS ANGELES. — Brown Drilling Co. of Long Beach, Calif., has completed negotiations with Arabian American Oil Co. for drilling several wells on a contract basis in Saudi Arabia.

E. C. Brown, president of the contracting company, and a complete drilling crew, including J. M. Wilson, superintendent, has left California en route to the Middle East. Crewmen accompanying Brown and Wilson include: E. E. Dawson, petroleum engineer; Glenn Robinson, tool pusher; K. L. Bourdo, mechanic; Leon Mounts, John Lemke and A. D. Dale, drillers; and B. Gent, Carl Teeters, Calvin Lawson and Lewis Dunn, derrickmen and floormen.

Russia to Drill 100 Wells in Tuimazy Field

WASHINGTON.—One hundred new oil wells will be drilled to the Devonian oil strata in the Tuimazy field, located between the Volga and the Urals, according to the Foreign Commerce Weekly.

This area, brought into production in 1936 and now known as the "second Baku," has a daily output of nearly 4,000 tons. Soviet oil men expect the field to be producing 10 per cent of Russia's total by 1950.

A pipe line is being built to carry the oil from Tuimazy to Ufa, refining center and capital of Bashikria.

Completion Scheduled Next Year for Bahrein Island Asphalt Plant

NEW YORK.—By July 1947, Bahrein Petroleum Co., Ltd.'s, modern asphalt plant, now under construction on Bahrein Island in the Persian Gulf, is expected to be completed, authoritative sources here state.

The new equipment will consist of a vacuum still charging topped crude, with a daily charging capacity of from 10,000 to 12,000 bbl. (42 gal.). The reduced stock from the vacuum unit will be charged to converters and reduced to the proper grade of paving or specialty asphalt by use of low-pressure air. Annual capacity of this plant will be 50,000 long tons (approximately 350,000 bbl.) and so laid out that, with minimum additions, its capacity can be doubled or tripled.

Present plans are to ship the asphalt in drums throughout the Near and Far East marketing areas. The total plant investment, including drum manufacturing and trucking equipment, will run around $2,000,000.

Meanwhile, Bahrein Petroleum has one drilling crew continuously engaged in a program calling for 12 wells to be drilled to the Bahrein zone. This drilling, which was resumed in March, marks the first such operations since 1940 when all drilling work was suspended. The program for 12 wells includes two gas injection wells; six new development wells; and four observation wells which will be located on the flanks of the structure and will be used in studies of the movement of the water table.

Since 1938, Bahrein Petroleum has been injecting high-pressure gas from a deeper zone into their shallower Bahrein zones, and because of the success of this pilot-gas injection project, it is now planned to step up the gas-injection rate so that recovery of oil will be at the ratio of approximately 75 per cent by gas drive and 25 per cent by water drive.

The six new development wells are being drilled to replace wells captured by gas in the crestal area of the field, and to improve the drainage pattern in other areas. For the present, the company plans to continue producing the field at around 20,000 bbl. daily.

The company is also renewing its exploratory program, which was suspended by the war, and is now preparing to drill 10 structure wells beyond the limits of the island itself but within the domain of the Shaikhdom of Bahrein—all of which is under lease to Bahrein Petroleum by terms of its concession.

The company operates a 100,000-bbl. refinery on Bahrein Island, and it is now running it at capacity, with the 80,000 bbl. difference (between production on Bahrein Island and the refinery throughput) coming from the mainland of Arabia by a 32-mile 12-in. pipe line from Dhahran. Sixteen miles of this line are under water.

Bahrein Petroleum Co., Ltd., is jointly owned by The Texas Co. and Standard Oil Co. of California. California Texas Oil Co., Ltd., is the marketing subsidiary, and is actively engaged over a wide area.

Lack of Materials Delays New Kirkuk-Haifa Line

NEW YORK. — Inability to obtain necessary construction materials, coupled with relatively slow delivery of pipe is all that stands in the way of speeding up work on the 620-mile 16-in. crude line of Iraq Petroleum Co., Ltd., from Kirkuk, Iraq., field to Haifa, on the eastern Mediterranean in Palestine. The project is not expected to be completed until 1949. It will parallel the existing 12-in. line to Haifa.

Current construction plans aim at building the line from Kirkuk to Haditha, on the Euphrates River, in Iraq, and then extending it to Haifa. On completion of the Haifa line, another 16-in. line will be built from Haditha to Tripoli. However, work on the Haditha-Tripoli line will not commence until the Kirkuk-Haditha-Haifa line is finished, according to present plans. The second 16-in. line will parallel the second existing 12-in. line to Tripoli.

On completion of both 16-in. lines, the production in Kirkuk will be stepped up from 85,000 bbl. daily to approximately 275,000 bbl. However, it is entirely likely that current production will be stepped up on completion of the Kirkuk-Haditha-Haifa segment of the line. Capacity of both 16-in. lines will be approximately 100,000 bbl. each. The Kirkuk field has demonstrated its ability to produce around 300,000 bbl. daily over a period of years.

Whether all the pipe for both 16-in. crude lines will be manufactured by Great Britain's Stewarts and Lloyds, remains somewhat unsettled. But as work has already progressed to a point where it is thought impractical for a United States firm to assist, it is probable that this English steel manufacturer will complete the job.

When the manufacture of pipe was first needed, it was thought that United States firms would provide it, but political considerations on the part of high U. S. Government officials stalled progress for a period of 2 years, during which time the British Government withdrew a dollar appropriation set aside for United States purchases and the English firm was given the contract. Just what effect the American loan will have on future purchases remains uncertain at this time, but there seems to be some possibility of a United States firm participating at a later date—possibly on the second 16-in. extension to Tripoli.

International

WORLD-WIDE OIL DEVELOPMENTS

Important Commercial Field Indicated South of Suez

CAIRO, Egypt. — Indications are definite that an oil field of considerable commercial possibilities will be developed on the west coast of the Sinai Peninsula—about 40 miles south of Suez—as a result of the successful completion of the SUDR wildcat and geophysical studies.

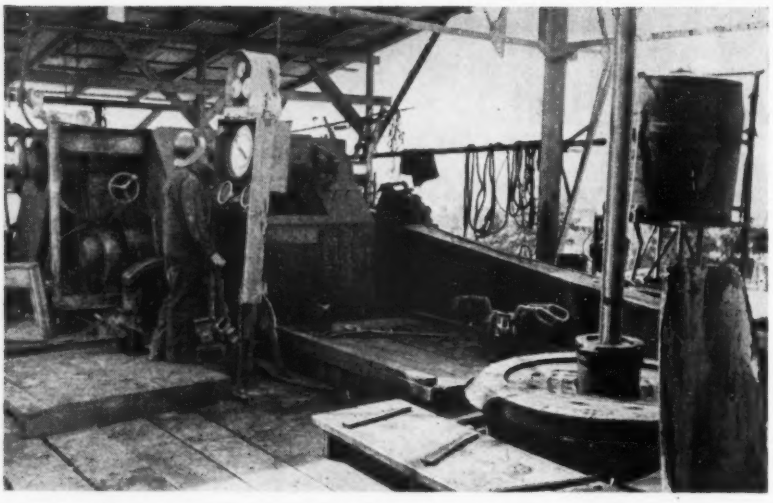
Anglo-Egyptian Oilfields, Ltd., is developing this area on an equal basis with Socony-Vacuum Oil Co., Inc. A second well is now being drilled, with every indication that additional drilling will be undertaken shortly.

This oil field will be the first of commercial proportions on the west side of the Sinai Peninsula and is located about 4 miles inland. On the east side, Egypt's only production, amounting to about 25,000 bbl. daily, comes from two oil fields, Ras Gharib and Hurghada. Indications of oil were found at Abu Durba, some years ago, but not of a commercial nature.

Phillips Preparing to Test Second Mata Grande Well

BARTLESVILLE, Okla.—With similar oil-bearing sands having been penetrated in the second well drilled by Phillips Venezuelan Oil Co., in the 25,800-acre Mata Grande concession, as were found in the discovery well, casing has been cemented preparatory to testing, according to the company's semiannual report.

This second well was drilled ¾ mile from the first one which was brought in earlier this year with an estimated daily potential of 300 bbl. of 26° (A.P.I.) oil through a ¼-in. choke from 4,745 to 4,960 ft.



This scene shows drilling operations in Mexico's major field, Poza Rica

Mexico Offers First Property for Private Development Since 1938

by Warren W. Burns

MEXICO CITY.—For the first time since the Mexican Government expropriated the majority of private oil properties here in 1938, the Government, by means of official notices published July 18 in the local press, asked that private individuals — of Mexican nationality—apply for exploration and development rights on a 30,000 hectare (about 75,000 acres) property in the state of Sinaloa, which is located on the west coast of Mexico.

Moreover, it is understood that Petroleos Mexicanos, the Government oil agency, will register no complaint against the formation of mixed companies in which foreign capital would have a share, as long as legal negotiations are carried on by Mexican members of the company.

Whether the obvious change of oil policy will permit the relatively few private producers whose properties were not expropriated 8 years ago to resume operations cannot be determined at this time. The Mexican Gulf Oil Co. and the New England Fuel Oil Corp. are perhaps the principal American interests with properties still in Mexico. However, the low price at which Pemex offered to buy privately produced crude, coupled with the restriction prohibiting the export of more than 10 per cent of an operator's output, resulted in private company operations coming to a standstill.

In consideration of the contractor who might bring in oil in commercial quantities in Sinaloa, the Mexican Government would collect a royalty of 12½ per cent, and the contractor "will have the right to remove the total (remaining) production which, without detriment to the field, may be utilized . . . for his own benefit," according to the official Government declaration.

However, upon obtaining commercially profitable production, the Secretariat of National Economy, it is stated, "will incorporate in the Petroleum Reserve half of the zone that may have proved productive; and after giving consideration to the contractor's declarations, will determine the program to be followed in the development of the remainder, in order to guarantee the most suitable development of the field in accordance with the findings of the exploration."

What this means is that after the private contractor has discovered oil the Government will be allowed acreage, on a chequer-board fashion, in the immediate area of the discovery well. Moreover, the Government states: "This zone or structure shall in effect be subdivided into squares, the size of which shall be determined in each case according to the extension and importance of the structure by the office of the Secretary."

The Mexican Government's reserved areas "are those with deferred exploitation in view of future needs of the country."

Concerning the 30,000-hectare property in the state of Sinaloa, it is not readily known why this particular spot was chosen by Petroleos Mexicanos. Currently, the Mexican Government is carrying on some geophysical work in Lower California, about 100 miles across the Gulf of California from the state of Sinaloa, but it is reported that no drilling has been done there to date. Some years ago, the Standard Oil Co. of California carried on exploration work in western Mexico but whether the Sinaloa area was explored is not known.

The concession being offered would be for a period not to exceed 30 years and is located in Sinaloa's municipality of San Ignacio. The area is in the shape of a quadrilateral of 30 km. from north to south, and 10 km. from east to west, the point designated for measurement consisting of a landmark located on the crest of the hill known as "Loma de la Chora." This is situated at the extreme southeast corner of the property described.

On the north, the lands are bounded by the communal lands of the ranches known as El Carrizal, Los Arrayanes, and El Platanal; on the south by the communal lands of the villages of Zacatecas, Tacuitapa and Los Humayes; on the east by national lands and the Ejidos of the villages of Ixtitan, Tecolotes, and Los Azafranes; and on the west by national lands and the communals known as Cuayocol, Colompo, Hurache and Los Callejones.

An important provision of the Mexican Government's offer is the 10 per cent provision which states:

"Within 30 days following the date on which the contractor is advised of a decision in his favor to execute the contract, the compliance of the obligations which he has assumed, will be guaranteed by a deposit in cash in the Banco de Mexico, S.A., or by a mortgage satisfactory to the Secretariat of National Economy, or by a bond of an authorized company; said guarantee to be equal to 10 per cent of the average cost, on said date, of three wells at the depth indicated under condition IV." Condition IV reads:

"The contractor will drill at least three wells during the first 3 years, to a depth of the probable formation most favorable for the gathering of oil in this zone."

Concerning these two provisions, oil men here point out that the amount to be deposited in the Banco de Mexico would hinge largely on what Pemex officials decided was the "most favorable zone," in that the 10 per cent deposit is directly related to the average operational costs. And in view of this, one source points out, it may be necessary for the applicants to have large cash reserves.

If the contractor does not have

three commercially producing wells at the end of 3 years, the Government will require that at least one additional well be drilled each year until three commercially producing wells are operating. At the end of 3 years, the contractor may elect to retain only one-third, or 10,000 hectares, of the land surface originally contracted for.

Production in Mexico, to date, has been confined to east coast areas, principally the Tampico area, where the relatively prolific Poza Rica field is located, and the fields in the Isthmus. In 1945, Poza Rica's daily output averaged approximately 62,500 bbl. Total daily production from all Mexican fields, in 1945, was approximately 118,000 bbl.

One stretch of land on the west coast of Lower California — located at least 200 miles from Sinaloa—is thought to be a favorable oil area.

Japanese Distribution Contract Completed

NEW YORK.—Final draft of the letter-of-intent for postwar oil operations in Japan has been signed here by the five participating companies and the U. S. Army's quartermaster general. The contract is now en route to General MacArthur's headquarters where approval and signature is necessary before the provisions are legal.

Japanese Oil Storage Co. (Josco) will be the name. The five participants—working under Army jurisdiction—are Standard-Vacuum Oil Co., Union Oil Co. of California, Tide Water Associated Oil Co., California Texas Oil Co., Ltd., and Asiatic Petroleum Corp.

This setup, as explained in the July 13 issue of The Oil and Gas Journal, will distribute petroleum products for military use throughout Japan, as well as taking care of offshore shipments to the surrounding areas. No private oil company operation—as this term is generally understood—will be allowed in Japan for the present, and probably not for several years because of the wartime disruption of Japan's overall economy.

In the Philippines, a similar company setup operates under the name of Pacific Oil Storage Co. (Posco), the main difference being that Tide Water and Union are not included as they are in the plan for Japan.

Drilling to Start Soon On Third Chilean Test

SANTIAGO, Chile.—As soon as the rig is moved from Chile's 2 Spring Hill well, which proved to be a dry hole, drilling will start on the third well with all indications that it will, like the discovery well brought in last December 29, prove to be a producer, according to authoritative sources here. The discovery well is reported capable of flowing 8,000 bbl. daily of 39° (A.P.I.) crude, but at present is shut in, due to lack of adequate transportation and storage facilities.

The third well will be located just 400 m. (approximately ¼ mile) southwest of the discovery well. While the second well, which proved to be a dry hole, was drilled 800 m. northeast of the first producer, it is pointed out this is no reason why Spring Hill will not become a highly productive field, as a peculiar geological formation was the reason attributed to the lack of oil in the second attempt.

An average depth of 300 ft. of glacial drift covers the entire north end of the Tierro del Fuego archipelago where the Spring Hill area is located. An interesting aspect of the Spring Hill geological structure, it is said, is that deposits in the Upper Cretacious structure are identical in age and physical appearance with those currently found in Alaska's Point Barrow wildcat, which is being drilled under direction of the U. S. Navy.

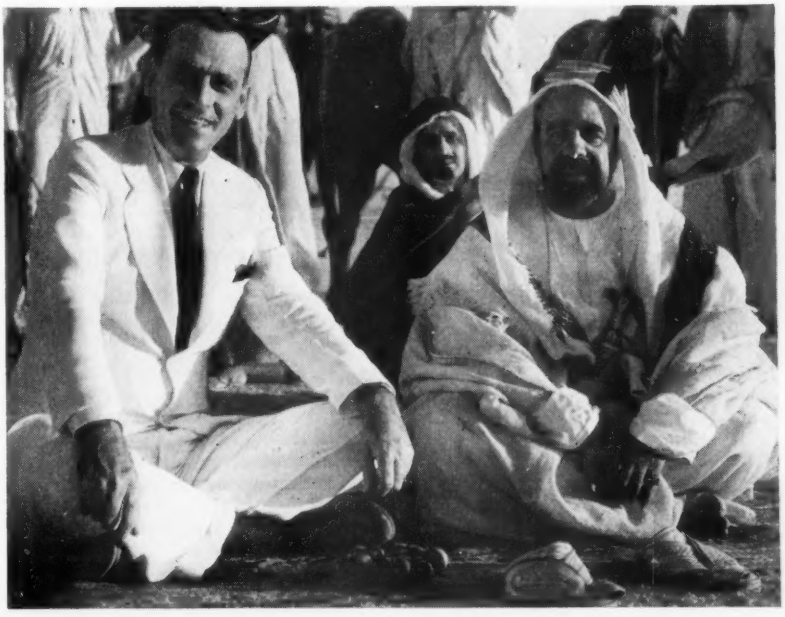
Questions as to whether the recent death of Chile's president and the election of another president, within the next 2 months would possibly alter the state-controlled oil operation in any manner, brings forth the statement here that Corporacion de Fomento de la Produccion is not subject to the political winds, any more than is the Reconstruction Finance Corporation in the United States. In other words, regardless of whom is elected, the funds appropriated for Fomento will not be tampered with.

Furthermore, it is pointed out that Chilean officials expect the Spring Hill area eventually to produce enough indigeous crude to take care of Chile's oil needs. And partially because of this, plans are going ahead on the construction of a refinery with a rated throughput of around 10,000 bbl. daily.

Gasoline to Be Provided For European Travelers

WASHINGTON.—A plan for providing gasoline for United States motorists traveling in five European countries on essential business has been announced by the State Department. The five countries concerned are Belgium, Czechoslovakia, France, Luxemberg, and Norway.

Each United States resident desiring to travel in one or more of the five countries will be issued a letter of credit containing up to five coupons, each good for 100 liters (approximately 26½ gal.) for a 3-month period. Upon arrival in the foreign country the letter of credit is exchanged for local rationing coupons.



Here is Russell M. Brown, new general manager of Bahrein Petroleum Co., Ltd., shown with His Highness Sir Sulman bin Hamed al Khalifah, Sheikh of Bahrein. Brown has been on Bahrein 9 years and was assistant general manager before his recent promotion. As general manager, he succeeded Ward P. Anderson who is now vacationing in California before resuming work with the company. Anderson had been on Bahrein Island 10 years, the last 4 as general manager

WASHINGTON WATCHING

BY HENRY D. RALPH

Provisions for the Subsidy

WASHINGTON.—Continuation of the stripper well subsidy is required by one section of the new price control law, but other sections appear to authorize its early termination.

Immediately after the law was signed officials of the Office of Price Administration, Reconstruction Finance Corp., and Interior Department went into a huddle to decide what the act means and what the program should be.

The law says that "subsidies with respect to petroleum produced from stripper wells shall be continued at not to exceed the existing rates." This is a specific exemption to a paragraph providing that other subsidies shall not be continued on a commodity no longer under price control. This paragraph also says that all subsidy programs are to be "progressively reduced" and terminated not later than April 1, 1947.

This was generally interpreted to mean that the stripper well subsidy goes back into effect immediately, retroactive to cover production between June 29 and July 25. Where crude purchasers had bought crude from stripper wells without paying the premium price during this interval they would get the retroactive subsidy only on condition that it be passed back to the producers.

The subsidy payments would thus continue unchanged until such time as a new policy is determined. Probably no new pools would be added to the premium price list, nor any increased rates granted to stripper wells now receiving less than the maximum subsidy.

The big immediate problem was what to do about the subsidy in cases where crude price increases have equaled the subsidy rate or a large part of it. The law would appear to give authority to reduce the subsidy by the amount of any general crude price increase.

On the other hand, the law probably could be interpreted to permit continuance of the stripper well plan at former rates without regard to posted crude prices if the administrative officials believe that the plan should be a permanent conservation measure and anticipate that Congress will so legislate prior to April 1. This problem is most pertinent to the Pennsylvania grade crude region where the subsidy of 75 cents per barrel is applicable to the entire area and where it appeared unlikely that a general price increase would equal that amount.

Quieting Bureaucratic Fears

THE last act of Ralph K. Davies before leaving Washington was to meet with the representatives of six other government agencies to assure them his new Oil and Gas Division has no designs on the functions and prerogatives of the others.

Officially it was the organization meeting of the interdepartmental petroleum committee, authorized by the President at the time OGD was created, and composed of officials from State, Commerce, War and Navy Departments, Federal Power Commission, and Civilian Production Administration. Davies explained that the idea was simply to promote a unified federal policy and coordinate actions of the various departments in the interest of harmony and efficiency, but he had to devote considerable time to quieting the fears of certain of the officials that OGD is scheming to take over their functions. In fact, certain of the agencies became so alarmed at the prospect that they called on friends in Congress to support them, if it should come to a show-down, in refusing to surrender their powers and responsibilities. Davies assured them no such shake-up is contemplated.

Davies will remain nominally acting director of the Oil and Gas Division on leave of absence until such time as a permanent director is selected. He plans to return to Washington in September for the quarterly meeting of the National Petroleum Council.

Tideland Bill Clears Congress

A THREATENED filibuster to delay enactment of the tidelands resolution failed to materialize, and the House sent the measure to the White House by approving, 188 to 66, a Senate amendment to the resolution which the House had adopted last September by a vote of 108 to 11.

The amendment, the only one adopted by the Senate, was sponsored by Senator O'Mahoney of Wyoming to reserve federal claims to the continental shelf oceanward from the farthest boundary claimed by any state. There was no controversy over this amendment, but when the House was first asked to accept it there was objection from Representative Hobbs of Alabama, one of the chief opponents of the resolution. He attempted to attach another amendment, one which the Senate had already rejected, to reserve federal claims to California and other submerged oil lands until the Supreme Court has acted on the tidelands case now pending before it. Because of the difficulty of obtaining a quorum these last few days of the session it appeared that the resolution might be delayed and finally would die with adjournment.

As it went to the White House the resolution completely denies any claim of the federal government to submerged lands under oceans, rivers, or bays, and confirms the title of the several states to such lands and any oil or other resources contained in them.

Many administration leaders predicted that President Truman would either veto the resolution at once on the ground that the Supreme Court should first pass on the question of title, or would leave it unsigned until Congress adjourns, which would amount to a pocket veto if, as scheduled, adjournment comes in less than 10 days from the date the measure reaches the White House. President Truman originally authorized the Department of Justice to bring the pending suit against the State of California, and the administration's position throughout the controversy has been that ownership of submerged lands is a legal question which should be decided by the courts rather than by Congress or by executive officials.

The Senator Expounds

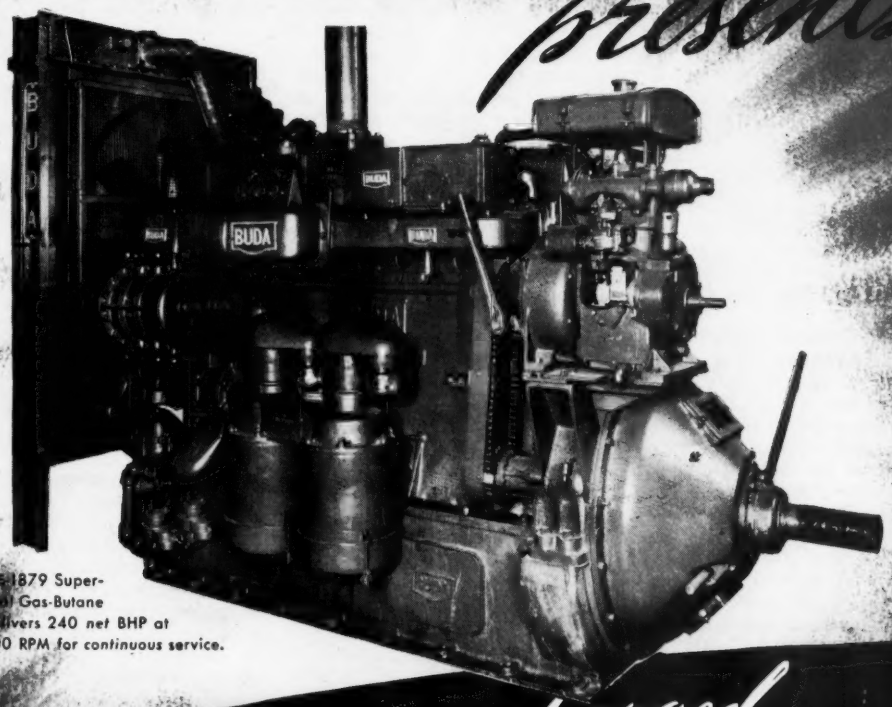
SENATE debate on the tidelands quit-claim resolution raged for 3 solid days and involved many learned legal discussions of state sovereignty, court decisions, and land titles, but Senate Leader Alben Barkley stuck to his contention that it is nothing but an oil-conservation measure.

The question before the Senate, he insisted, was to decide between the conservation of oil that may belong to the United States Government and its exploitation and use by any private oil company, though he failed to explain how the Federal Government proposes to insure conservation and prevent exploitation.

The harried majority leader got a

BUDA

presents...



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bit mixed up in his geography and history when he declared that the Government is building a pipe line from "Arabia and Saudi Arabia."

"Even before the recent war ended," he told the Senate, "we were negotiating for and cruising around all over the world to get our share of oil reserves. We even authorized the construction of a $135,000,000 pipe line in Arabia in order to transport oil from Arabia and Saudi Arabia and neighboring regions to the Mediterranean Sea for the benefit of our Army and Navy and all our arms. We are now engaging in international negotiations in order that we may have our share of that oil, not only in the Near East but in the Caribbean Sea also. Our Army and our Navy and our State Department are undertaking to garner to ourselves enough oil wherever it may be found to guarantee our defense in any future war.

"Yet, in spite of that fact, we are asked in this joint resolution to give away hundreds of millions of barrels of oil lying just off the shores of the United States, in order that it may be obtained by private oil companies who are anxious to get control of that oil in order that it may be exploited and its supplies diminished."

Throughout the entire debate no Senator challenged the implication that oil produced from federal leases is conservation while oil produced from state-owned lands is exploitation. Yet the only argument raised against the legislation was that it would "give away" oil belonging to "the nation" and which, it was inferred, would henceforth be forever unavailable for use by the American people.

Land Agency Merger

NO immediate changes in the administration of the oil and gas leasing laws took place last week when the General Land Office ceased to exist and became a part of the new Bureau of Land Management, though a lot of them were being readied for early announcement.

All field offices were directed to continue dealing with the public the same as before, pending their reorganization and amalgamation with the field offices of the old Grazing Service. The local land registers lose their status as political appointees but are continuing to function pending their reappointment as, or replacement with, civil service employes. The leasing laws and regulations continue as in the past. The mineral leasing of forest lands has been transferred to the new bureau from the Department of Agriculture, but outstanding lease terms are not changed.

The two top men of the GLO, Commissioner Fred W. Johnson and Assistant Commissioner Joel Wolfsohn, are serving as acting director and acting assistant director of the new bureau, and the other personnel of the GLO and the Grazing Service are continuing their old functions for the time being.

While the President announced the merger in one of his government reorganization plans 2 months ago; nothing could be done about putting it into effect until 60 days had elapsed, and until the last moment it looked as though Congress would block the scheme. The House passed a resolution to prevent the merger, but 1 day before it was to take effect, the Senate defeated the resolution by a close vote.

Interior Department officials are now very busy with the details of fitting the two old agencies into the new pattern and amending all regulations to conform with the new terminology. Before long they hope to eliminate uneconomical and time-wasting duplications. A fundamental policy of the new bureau is to do as much work as possible in the field offices, close to the lands being managed and to the persons who are leasing them.

Through a coincidence, this reorganization came just at the time Congress is rewriting the oil and gas-mineral leasing act. The measure is expected to become law very shortly and will require a number of changes in the regulations and operations of oil and gas leasing of public lands. After these two readjustments have taken place the new BLM ought to give much better service to oil operators on the public domain.

Former Oil Executive Chosen

A FORMER oil company executive has been named by President Truman as one of the three members of the Economic Advisory Council which will administer the so-called full-employment act passed by Congress last spring.

He is Dr. John D. Clark, now professor of economics and dean of the College of Business Administration of the University of Nebraska, but formerly president of the Mid West Refining Co., in Denver, Colo. Clark started as a lawyer in Cheyenne, Wyo., moved to Denver where he did legal work for Mid West, and became president of the company. Later he went to Chicago as assistant to Col. Robert Stewart, former chairman of the board of the parent Standard Oil Co. of Indiana.

Some 15 years ago Clark decided he had accumulated enough money to permit him to indulge his lifelong ambition to be a teacher and he joined the faculty of the University of Denver. He had a taste of government work between 1937 and 1939 when he served as adviser to the Senate committee on government reorganization.

The Council of Economic Advisers could prove to be one of the most important agencies in the country since it is charged with helping the president draft an annual "job budget," public works program, and legislative and administrative policies designed to provide "60,000,000 jobs," eliminate the business cycle, and maintain stable prosperity. Another member of the council is Leon H. Keyserling, general counsel of the National Housing Agency. The third is yet to be selected.

Tanker Sales Unsnarled

THE administrative log-jam which has prevented the sale of surplus government tankers has finally been broken by a series of policy decisions of the U. S. Maritime Commission, and sales have now started.

The first announcement covered the sale of three T-2 type tankers, one to the Tanker Sag Harbor Corp. and two to the Union Oil Co. of California. These vessels are 523 ft. long, 16,500 deadweight tons, turbo-electric drive, 14½ knots, and 141,100 bbl. capacity.

Before any sales could be made the commission had to reach a number of policy decisions involving technical interpretations of the ship-sales act. The most important problem was how to evaluate individual vessels to account for wartime depreciation and cost of conversion from military to commercial use without bringing the sales price down below the minimum set by the law's formula.

It has now been determined that the commission will sell ships "in class," that is, after removal of military gear and remodeling, but if the cost of this work brings the price below the floor the purchaser must pay the difference. A uniform scale of wartime depreciation, based on type of vessel and length of war service, has been adopted as preferable to individual assessment of each particular ship being sold.

New Rubber Plant Report

THE huge government-owned synthetic rubber industry should be sold to private operators within the next few months under conditions which will promote competition in research and development of new products and more economical processes, it is recommended in the second report of the Inter-Agency Policy Committee on Rubber, headed by William L. Batt.

The report deals primarily with the patent pools created by the Government to obtain all possible information for the success of the rubber program and to avoid patent infringement suits against the Government. It is recommended that these pools be dissolved and that sales of rubber and butadiene plants be made in

such a way that the purchasers will be encouraged to conduct their own research work without the necessity of sharing their discoveries with competitors. This will be a bit complicated in cases where a company buys one plant outright but is still under obligations to operate another plant for government account, but the report suggests various legal devices for surmounting this obstacle.

Leasing Bill's Final Changes

CONGRESS has completed action on the Hatch-O'Mahoney oil-leasing bill and sent it to the White House with the adoption of a conference report which made only three changes in the version as adopted by the House.

One of these affects the acreage limitation on the public land leases which may be held by any one person. The revised bill permits joint leases as tenants-in-common but provides that the aggregate of such holdings shall not exceed the total permitted to any one person.

The second change requires the assignee of a lease to be bound by the terms of the lease until the assignment has been approved by the Interior Department.

The final change made in conference makes it clear that royalties are not being reduced on outstanding leases in productive fields.

These changes were suggested by officials of the Interior Department who feared that the original language might be misinterpreted. The conferees stated that the department is now satisfied with the bill, although it still requires a flat 12½ per cent royalty on new discoveries instead of the step-scale royalties the department has been using in recent years.

I.P.A.A. Committee Asks Cut in Crude Production

CHEYENNE, Wyo. — Recent additions to storage of crude and products were termed excessive and were sharply criticized as "unsound and wasteful" in a report on the petroleum supply and demand outlook for the last half of 1946 which was presented to the executive committee of the Independent Petroleum Association of America at its two-day meeting here.

The committee preparing the report was headed by Charles F. Roeser, Fort Worth, as chairman, with H. B. Fell, Ardmore, Okla., as vice chairman. It noted the relatively large demands for petroleum products but said increases in crude production have exceeded these demands with the result that 13,000,000 bbl. of crude and products were added to storage in April, May, and June.

The committee's estimates of future total oil demands averaged 5,250,000 bbl. daily for the third quarter of 1946 and 5,300,000 bbl. for the last 3 months of the year. To meet these demands, required crude-oil production (exclusive of natural gasoline and benzol) during the 3 months July through September was estimated to range from 4,510,000 to 4,700,000 bbl. daily, depending on whether stock and import levels are maintained or reduced. In contrast, it was stated, crude-oil production is now running about 4,930,000 bbl.

The report recommended that the Interstate Oil Compact Commission urge the state regulatory bodies to reduce crude-oil production to consumptive demand. It was also recommended that industry operations be adjusted to prevent excess accumulations of stocks of any product and that imports be reduced to a fair proportion of demand.

Claude Parsons Appointed Hughes Tool Vice President

The appointment of Claude P. Parsons as vice president and special sales representative of Hughes Tool Co. has been announced by Noah Dietrich, executive vice president.

C. P. PARSONS

Parsons has been a leading figure in the oil-producing industry and is well-known in oil circles in the southwest. Prior to joining Hughes, he was vice president in charge of sales for Halliburton Oil Well Cementing Co. of Duncan, Okla. He also filled the executive positions of chief field engineer and general sales manager.

Parsons entered the oil fields in 1919 after his release from the U. S. Army Air Force where he served as a pilot in World War 1. During the recent war he served for almost 2 years as director of the material division, Petroleum Administration for War, Washington.

Parsons is a member of the American Association of Oil Well Drilling Contractors, the American Institute of Mining and Metallurgical Engineers, the American Association of Petroleum Geologists, and the American Petroleum Institute. He also is a member of the Tulsa Nomads and the Tulsa Engineering Society.

Shell's Production Setup Undergoing Reorganization

The exploration and production organization of Shell Oil Co., Inc., in the territory east of the Rockies is undergoing a gradual reorganization as a result of which a regional staff will be set up in Houston and two new area offices opened in West Texas and in Louisiana.

Latest step in the reorganization was the appointment of T. R. Goebel as regional director of gas and gasoline. For the time being, Goebel will continue to act as manager of the gas-gasoline department in the present Texas-Gulf area. Another new appointment was that of J. H. Sembower to the regional staff to coordinate personnel and industrial relations.

Under the reorganization, Shell's territory will be divided into four areas instead of two. Operations out of the new area offices and out of the Houston office will be under an area manager. Operations out of Tulsa will continue under direction of R. B. Roark, vice president. In Tulsa last week, it was announced the gas-gasoline division of the Mid-Continent area has been set up as a separate department with V. E. Middlebrook as department manager. J. W. Cowles, former head of the division, is to retire in the near future.

DEATHS

Charles E. Clay, 48, credit manager of Primrose Petroleum Co., died July 24 in an airplane accident near Dallas.

Walter B. McCowen, 55, veteran Indian Service official in Oklahoma, died July 21 in Tulsa. He was associated with the oil and leasing division of the service during the Indian oil activities of the twenties.

Harry V. LeBourveau, 55, plant manager for the Shell Oil Co., Inc., at Sewaren, New Jersey, died recently in Staten Island, N. Y.

William O. Hilliard, retired oil producer, died July 18 at his home in Lafayette, Pa.

Henry B. May, Sr., 59, independent oil producer, died in Dallas July 19.

Frank K. Weaver, 61, geological department superintendent of United Fuel Gas Co., died July 24 in Charleston, W. Va.

O. H. Shoup, vice president and director of Bace Oil Co., died July 23 at his home in Wichita, Kans.

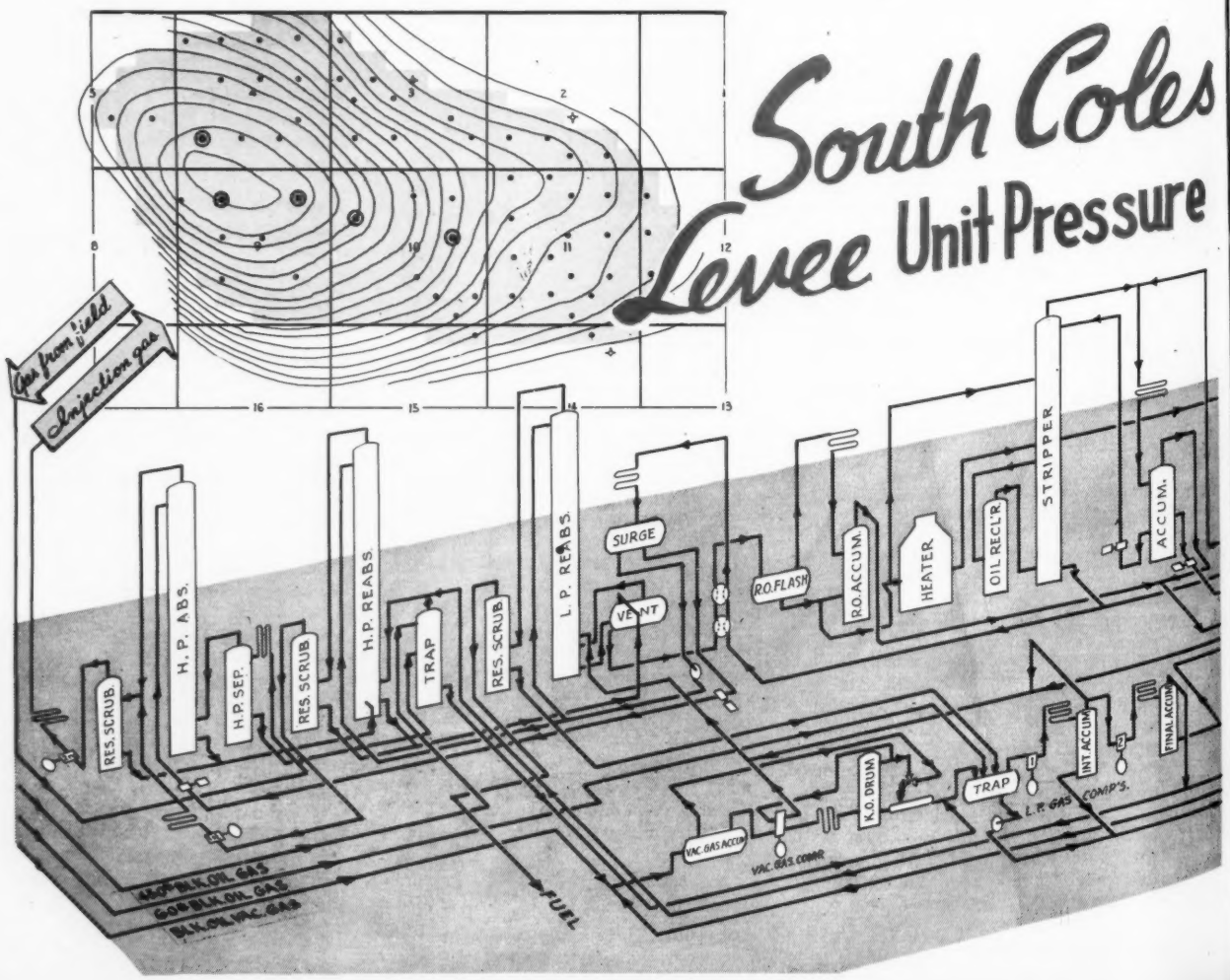
W. M. Alkire, 59, district production superintendent of Amerada Petroleum Corp., died July 26 at Midland, Tex.

Daily wet-gas capacity of this new absorption-oil type cycling plant is 45,000,000 cu. ft. daily

SOUTH COLES LEVEE was discovered as a result of seismograph exploration, and the completion of Ohio Oil Co. 1 KCL-F (now 74-10) on November 11, 1938. Initial production was 885 bbl. of clean, 44.5° A.P.I. gravity oil and 5,600,000 cu. ft. of gas. Top of the producing zone in this well was at 9,240 ft., and total depth was 9,365 ft.

Core analysis and interpretation of the electric log resulted in the identification of the producing formation as the Stevens zone. The Stevens zone was first discovered and named by Shell Oil Co., Inc., in the Ten Section field. This zone is of the upper Miocene age, and consists of sands of varying permeability, containing many lenses of shale and silt, few of which have any appreciable areal extent.

by L. P. Foote



Maintenance and Cycling Project

SOUTH COLES LEVEE and North Coles Levee are two major fields in California's oil-rich San Joaquin Valley. Both were discovered in 1938, and their subsequent development programs, with production by pressure maintenance, follow the most scientific planning and execution at the command of modern petroleum engineering. In The Oil and Gas Journal issue of July 20, the North Coles operation was described—and now in this article the details of the South Coles unitized project are given. The author, with the Ohio Oil Co., presented the paper (here slightly condensed) at the recent meeting of the California Natural Gasoline Association at Los Angeles.

Permeability of the sands ranges from almost zero to more than 1,000 millidarcys and shows no regularity of gradation from well to well. Porosities average about 20 per cent. The Stevens zone has been found productive in the following major oil fields: Canal, North Coles Levee, South Coles Levee, Elk Hills, Greeley, Paloma, Strand and Ten Section.

The South Coles Levee structure is anticlinal with the main axial trend being almost due east and west. Little is known regarding the structural closure west of the crest. Inasmuch as the sands become too tight to be productive a short distance west of the structural high, no wells have been drilled to delineate the structure in this area.

The top of the producing zone was reached at about 8,400 ft. in the highest wells and at 9,963 ft. in the lowest producing well. Productive sand thickness ranges from about 100 ft. to more than 400 ft. Productive extent is about 3,600 acres.

Development of the field proceeded in an orderly manner, and by February 1942, 55 wells had been drilled by the five operators in the field: The Ohio Oil Co., Richfield Oil Corp., Standard Oil Co. of California, Tide Water Associated Oil Co., and Union Oil Co.

No wells were drilled during the remainder of 1942 nor in 1943. Development was resumed in April 1944, after the consummation of the South Coles Levee unit plan. Since that time, 12 wells have been completed, bringing the total of completed wells to 67. Of this number, only two dry holes have been drilled, 56-2 and 72-14, both outside the unitized area.

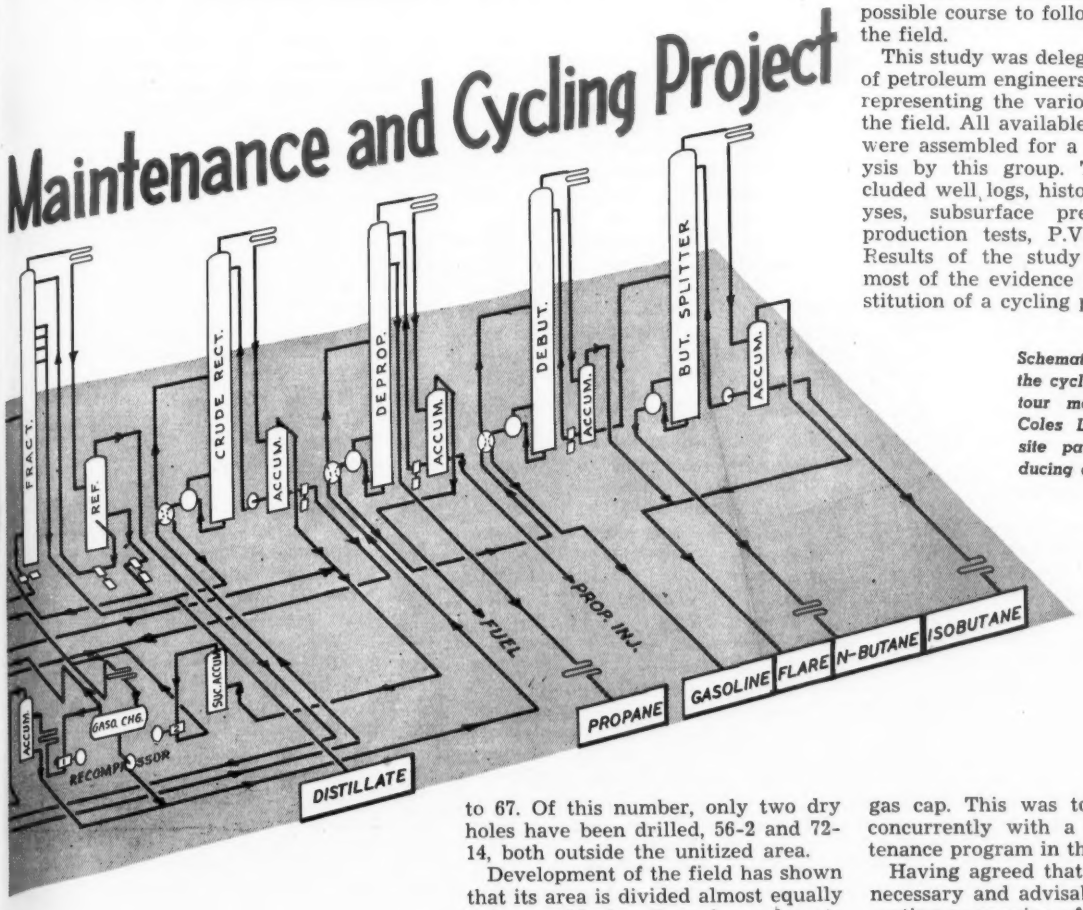
Development of the field has shown that its area is divided almost equally between black oil and condensate production. The condensate area occupies the higher parts of the structure down to a depth of 9,300 to 9,400 ft. Wells completed below this depth produce black oil. Most of the wells in this latter group are in the eastern half of the field.

Under initial reservoir conditions, the pressure was about 4,200 psi. and the temperature 235° F. Laboratory tests on recombined trap samples of the gas cap material indicated that these hydrocarbons probably were in the gaseous phase under these conditions. The material exhibited retrograde characteristics, and seemed to be at the dew point. Initial producing gas-oil ratios were about 10,000 cu. ft. per barrel, and the gravity of the liquid was sometimes as high as 60° A.P.I. Oil from the black-oil area averages about 35° A.P.I., and under initial conditions producing gas-oil ratios were about 1,000 cu. ft. per barrel. It is believed that the oil was at the bubble point under initial reservoir conditions.

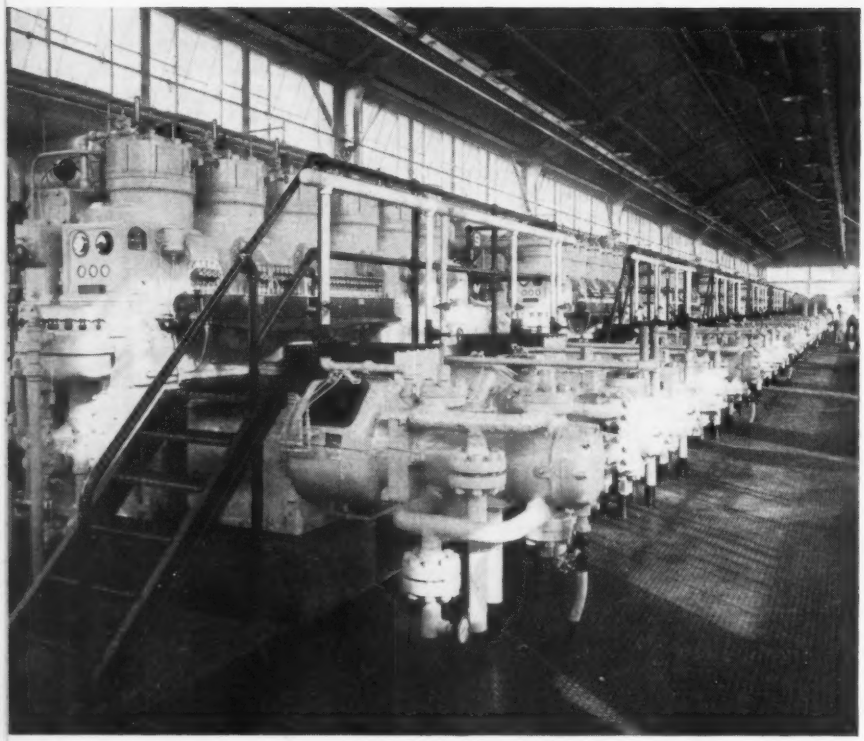
As soon as the character of the gas cap material was recognized, the operators in the area began to give consideration to the feasibility of gas cycling to prevent loss of liquid recovery, due to pressure decline in the reservoir. It was decided that a study should be made to determine the best possible course to follow in producing the field.

This study was delegated to a group of petroleum engineers and geologists, representing the various operators in the field. All available pertinent data were assembled for a thorough analysis by this group. These data included well logs, histories, core analyses, subsurface pressure records, production tests, P.V.T. report, etc. Results of the study indicated that most of the evidence favored the institution of a cycling program for the gas cap. This was to be carried on concurrently with a pressure maintenance program in the black oil area.

Having agreed that unitization was necessary and advisable, the five operating companies, after some months of negotiations, formulated and exe-



Schematic flow diagram of the cycling plant and contour map of the South Coles Levee field (opposite page) showing producing and input wells



Looking down the line of nine two-cycle, 600-hp. angle-type compressors

cuted, with the consent of their common lessor, the South Coles Levee unit plan. The Ohio Oil Co. is the operator designated in the unit plan, which went into effect on March 1, 1944.

The planned program has been fulfilled in all respects. The originally proposed drilling program has been changed from time to time to meet newly discovered conditions. Status of the 67 wells completed to date is:

Black oil wells	38
Condensate wells	21
Injection wells	5
Idle, noncommercial wells	1
Abandoned wells	2
Total	67

Cycling Plant

The plant is of the oil-absorption type with a processing capacity of 60,000,000 cu. ft. per day of wet gas. Under present operating conditions the over-all plant recovery is 98 per cent of the normal butane, 88 per cent of the iso-butane, approximatly 30 per cent of the propane and all of the pentane and heavier fractions at present load conditions.

Approximately 45,000,000 cu. ft. per day of wet gas enters the high pressure absorber operating at 1,500 psi. The gas rate to the high pressure reabsorber is 15,000,000 cu. ft. per day. This vessel operates at 450 psi. The low pressure reabsorber operates at 175 psi. and processes approximately 1,000,000 cu. ft. per day. The residue gas grom the 450 psi. reabsorber and the 1,500 psi. absorber amounts to approximately 54,000,000 cu. ft. per day. This gas is taken through the gas engine driven compressor units to the injection wells. The gas from the 175 psi. reabsorber is burned as plant fuel.

At rated capacity the plant is expected to recover approximately 7,000 bbl. per day of liquefied products: 4,650 bbl. of 50° A.P.I. debutanized condensate, 715 bbl. of natural gasoline, 660 bbl. of normal butane, 440 of iso-butane and up to 600 bbl. of propane.

Gathering and Injection Systems

The field line system is designed to transport gas from 16 producing wells to the plant. However, the number of producing wells will increase as drilling is completed. Each production well has a separate flow line to the plant where the well effluent is measured through an orifice meter. The production lines are of 3-in. and 4-in. Grade B pipe. The maximum pressure drop allowed in any producing line is 100 psi. from the well to the plant. The longest production line is 7,000 ft. The production lines are designed for a working pressure of 3,000 psi. at 160° F. These lines operate at full well head pressure with all pressure reduction taken through a flow bean at the plant. It was thought not advisable to take any pressure reduction and consequent temperature reduction at the well because of the possibility of hydrate formation. All production and injection lines are insulated and carried on concrete piers with expansion loops approximately every 1,000 ft.

The injection system is of the main header type, a single line running through the field with branches to each injection well. An orifice meter is installed on each of the branch lines. The injection wells are located along the high of the structure. The injection system is designed for 4,000 psi. at 180° F. Each injection well is equipped with a check valve at the well head. Branch lines to the injection well are of 3 and 4-in. pipe. The main injection header is 8-in., Grade B, 1⅛-in. wall pipe at the plant, and grades down to 4-in. Grade B, Schedule 120 pipe. Expansion bands are installed at every well, both production and injection, to eliminate the possibility of transmitting any stress from the lines to the well heads.

Gas System Within Plant

The flow sheet illustrates the flow of gas and liquids through the plant and will be referred to in the following discussion. The production gas arrives at the plant at pressures varying from 1,800 to 2,600 psi. and temperatures from 110 to 140° F. The pressure is reduced to 1,800 psi. by passing the gas through a flow bean before it reaches the production header. This holder is designed for a working pressure of 3,000 psi. In the production header all the condensate wells' effluent is commingled. The gas and liquid then flows through a pressure reducing regulator which is controlled by the pressure in the 1,500 psi. absorber residue scrubber. The purpose of this regulation valve is to reduce the pressure to 1,500 psi. and hold a constant pressure on the high-pressure absorption system. After passing the pressure reducing valve, the gas flows through cooling coils where the temperature is reduced to 90° F.

From the coolers the gas flows to the high-pressure gas separator which is 54 in. in diameter by 15 ft. high, with a design working pressure of 1,600 psi. The liquid continues into the fractionation system which will be discussed later. The gas from the 1,500 psi. separator flows directly to the high-pressure absorber which is 66 in. in diameter by 75 ft. high, having a shell thickness of 3$\frac{7}{16}$ in. This vessel has 30 trays on 24-in. centers. Here the gas is contacted with sufficient absorption oil to get the desired recovery of the heavier hydrocarbons. The gas then flows into the high-pressure residue scrubber before going to the second-stage repressure compressors.

The high-pressure absorber residue scrubber is equipped with a mist extractor, high liquid-level alarm and a high liquid-level shutdown switch to ground the magnetos on the compressors. Any liquid carryover from the

high pressure absorber is thus prevented from reaching the compressor cylinders. This feature is also installed on all compressor suction scrubbers.

After leaving the high pressure compressor cylinders the gas is cooled from 225 to 160° F., and is returned to the sand through five injection wells. A check valve is installed in the injection line near the plant to prevent any back flow of gas from the injection line should this system fail in the plant. The compressors are installed to deliver 54,500,000 cu. ft. per day of absorber gas to the injection system at 4,000 psi. The eight installed compressor services vary in suction pressures from 6 in. vacuum to 1,500 psi. and in discharge pressures from 30 to 4,000 psi.

Black Oil Production Gas

Gas from the black oil production is brought to the plant at three different pressures, namely, 450 and 60 psi., and 6-in. vacuum. The 450 psi. black oil gas flows to the 450 psi. separator where it commingles with the condensate flash gas. The mixed gas stream flows into a high pressure reabsorber which is 60 in. diameter by 63 ft. high, with 24 trays on 24-in. centers. The bottom section of this vessel is used as a 450 psi. flash tank for the rich oil from the base of the high-pressure absorber. In this vessel, the combined gas stream is contacted with the required absorption oil. The gas then flows to the 450 psi. reabsorber residue scrubber before going to the first-stage repressure compressors, which have a suction pressure of 430 psi. and discharge pressure of 1,510 psi. From here the gas flows through a cooling coil where the temperature is reduced from 275 to 90° F., and thence to the high-pressure absorber residue scrubber. Here it is mixed with the residue gas from the high-pressure absorber.

The 60 psi. black oil gas flows into the 60 psi. trap as does the condensate from the 450 psi. trap. Here the 60 psi. black oil gas is commingled with the flash vapors from the 60 psi. condensate. This 60 psi. trap also serves as the liquid charge tank for the crude debutanizer column. From here the gas flows to the first stage of the low pressure gas compressor and is compressed to 180 psi. The gas is again boosted, after cooling, and flows through a final accumulator to the 450 psi. reabsorber.

To complete the compressor services, the fixed gases from the stripper reflux accumulator, the hot rich-oil vent tank, and the crude rectifier reflux accumulator are commingled. These three gases are at approximately the same pressure, which renders them suitable for one compressor service. The first stage recompressor picks up the combined three streams at 70 psi. and discharges at 190 psi.

Compressor building at South Coles Levee cycling plant

Before this gas enters the cooler, the overhead liquids from the stripper and crude rectifier are blended with this gas for the sponge effect. From this cooler, the liquid and gas goes to the depropanizer charge tank which also serves as a gas separator for the second stage recompressor. This service takes the gas at 185 psi. and discharges at 450 psi. The gas then flows through a cooler, an accumulator, and thence to the 450 psi. reabsorber.

One compressor cylinder handles vapors from the black oil storage tanks in the field and from the debutanized condensate storage tanks at the plant. This gas is taken through the vacuum gas liquid accumulator, thence through two stages of compression to the 175 psi. reabsorber. The residue gas from this vessel flows directly to the plant fuel system. The 175 psi. reabsorber vessel is 36 in. diameter by 28 ft. high, and has 16 trays on 18-in. centers.

Absorption Oil System

The rich absorption oil flows from the base of the 1,500 psi. absorber through a liquid level control valve into the base of the 450 psi. reabsorber, where the flash gas is liberated. The rich oil from the base of this reabsorber also flows through a liquid level control valve into a 5-ft. diameter by 10-ft. long horizontal flash tank. The flash gas then flows into the base of the 175 psi. reabsorber where it is mixed with the compressed gas from the vacuum system. The rich oil from the base of this vessel also flows to the 175 psi. rich oil flash tank mentioned above. From this flash tank, the rich oil flows counter current through the absorption oil heat exchangers. Here the temperature of the rich oil is increased from 95° to 404° F.

The oil then flows to the hot rich oil flash tank. The liquid leaving this vessel flows to the fired heater where the temperature is increased to 500° F. The hot rich oil then flows to the stripper where the absorbed material is stripped from the oil. The hot lean oil then flows through the absorption oil exchangers where the temperature is reduced from 482° to 137° F.; then through the lean oil coolers for final cooling to 80° F. From here, the oil flows to the lean oil surge tank, which is 10 ft. diameter by 30 ft. long. This surge tank allows approximately 20 minutes detention time for any entrained water to settle.

The 270 gpm of lean oil is pumped to the 1,500 psi. absorber with three 3½ by 12 horizontal duplex, outside packed plunger pumps. Each pump is driven by a 4-cylinder, 185-hp. 4-cycle natural gas engine. The size of these pumps was selected and the pumps geared to the engines in such a ratio that any two pumps can deliver the required quantity of lean absorption oil at rated engine speed. The lean oil for the 450 and 175 psi. reabsorbers is pumped with a turbine-driven, 6-stage, centrifugal pump. There are two identical pumps and turbines for this service, either one of which can furnish the required 230 gpm of oil.

(Continued on page 99)

Deep Drilling in Oklahoma

by L. L. Jones, Jr.

Tallest derrick in Oklahoma. Looking skyward on the Ohio Oil Co. 1 Harrison, deep test being drilled in Grady County, Oklahoma. Derrick provides hoisting facilities for big rig of Parker Drilling Co. 186 ft. from ground to crow's nest

THE fact that deep drilling is gradually working its way into the southwestern Oklahoma drilling areas is evidenced by the number of deep tests presently being carried on in several sectors of that part of the state. Over a period of years average drilling depths in Oklahoma have been around 3,500 to 6,000 ft., with much deeper wells occurring only in a few relatively isolated spots.

Deeper drilling to many Oklahoma contractors will be something comparatively new. The average contractor, both large and small, will probably have draw works and other rotary-drilling equipment capable of drilling to around the 8,500-ft. level. Good production on deep tests now being drilled will undoubtedly demand purchase of more rotary-drilling equipment of newer and much larger sizes. Most of the formations to be cut are definitely in the "hard rock" category.

Many drilling companies who are owners of rigs with a 10,000-ft. capacity will probably be called on to complete deep wells below the 13,000-ft. mark. One active location in the territory is contemplating drilling to 17,000 or 18,000 ft.

This discussion is concerned with the practices being used at representative tests now drilling in the eastern Anadarko basin of Oklahoma, an area in which important deep production has been found, with prospects for the discovery of major reserves considered favorable.

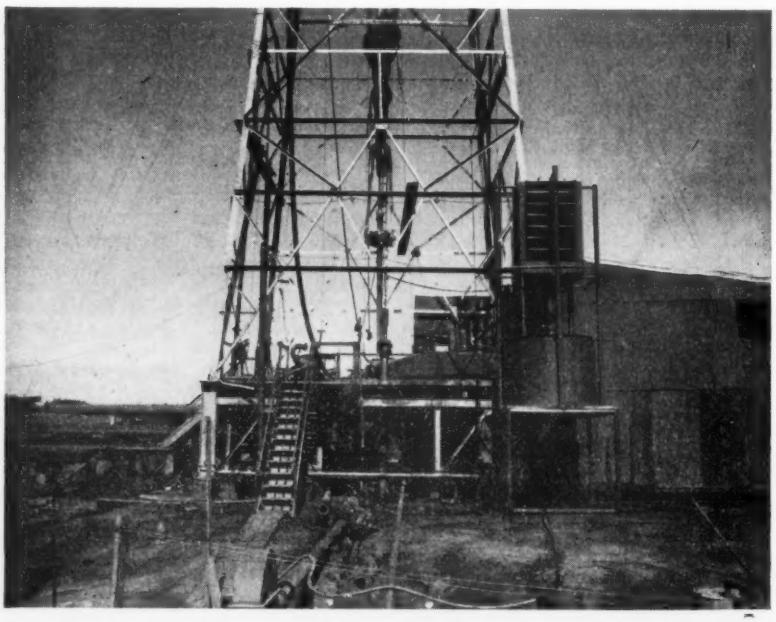
An interesting example of deeper drilling in the state is the 1 Giles being drilled by George P. Livermore, Inc., of Lubbock, Tex. The well, located in the central part of Grady County, approximately 5 miles west of Blanchard, is now below 11,970 ft. Large rotary equipment on the rig is a Wilson Titan draw works and three Cummins "Type L," 225-hp. diesel engines. Two Emsco slush pumps are also powered by the diesels. These pumps are of different sizes, one being 8 by 16 in. and the other 7¼ by 14 in.

The well was started December 8, 1945. A remarkable feature of the hole is that no straight-hole test was ever as much as 1° off vertical. Considering the depth and number of days to drill to that depth (approximately 200 days) much credit can be given to careful drilling and to superior mud control and engineering.

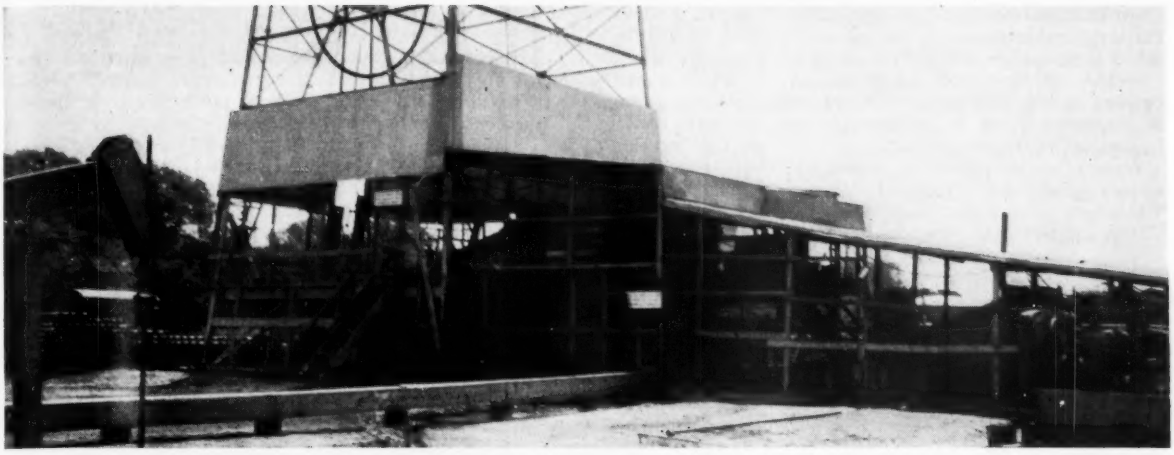
The rig on the well is normally rated for drilling to about 10,000 ft. In most cases, however, certain engineering changes or adaptations enable considerably deeper drilling. The draw works, powered by engines supplying a total of 675 hp., is driven by a transmission with a rated capacity of 750 hp. The difference in rated power in this case could be supplied by larger engines if necessary, and more footage drilled.

In the rigging-up process on the location, which was done in the middle of winter, an eye was kept to maintaining an economy of space, and also to midwinter comfort. Until the advent of warm weather, the entire rig floor, engines, and slush pumps were completely housed by virtually airtight "boxing in" job. At present the protective walls have been taken down from around the rig floor, but with the more permanent structure surrounding the machinery left in place.

In keeping with the economy-of-



View from east side of rig floor on George P. Livermore, Inc., 1 Giles in Grady County, Oklahoma. Substructure, installation of cooling tower and part of "boxing in" job protecting motors, pumps and other equipment are shown. Pumps are inside housing to facilitate good working conditions in foul weather



Arrangement of draw works and pump on big rig of Parker Drilling Co. on No. 1 Harrison, Ohio Oil Co., Grady County, Oklahoma

space problem, the company has rigged up the slush pumps on skids directly below the engines. One pump is almost on the vertical below the engines, while the other is set slightly farther back. Roughnecks and drillers alike commented on the degree of efficiency achieved from this arrangement, especially when new liners or inserts had to be replaced in foul weather. This is just one example of the many uses for empty space available under the substructures of most drilling rigs.

Bathhouse Provided

Another comfort item installed on the Livermore location is a built-in dressing room and shower bathhouse directly below the rig floor on the ground level. Constructed of corrugated sheet iron and wood, the dressing room is well lighted and heated.

A pipe survey of the hole shows that there is approximately 5,650 ft. of 9⅝-in. casing in the well. For the next string, 7-in. casing was set from the surface to the 11,970-ft. level. Original total depth was to be 12,000 ft., but now the hole is projected simply "to the Wilcox."

Another deep-drilling task under way in the Sooner State is the Ohio Oil Co. 1 Harrison, located in the extreme southern part of Grady County. Starting on November 6, 1945, the well is now below a depth of 9,100 ft. Conditions in the hole demand that a minimum of weight be run on the drill stem, consequently the drilling procedure is very slow.

The well is being drilled by Parker Drilling Co. of Tulsa. The Type FE National Supply Co. draw works and rig in use, interestingly, is the one that was used on the drilling exhibit at the New York World's Fair in 1939. Since its exhibition days the rig has made quite a number of deep wells.

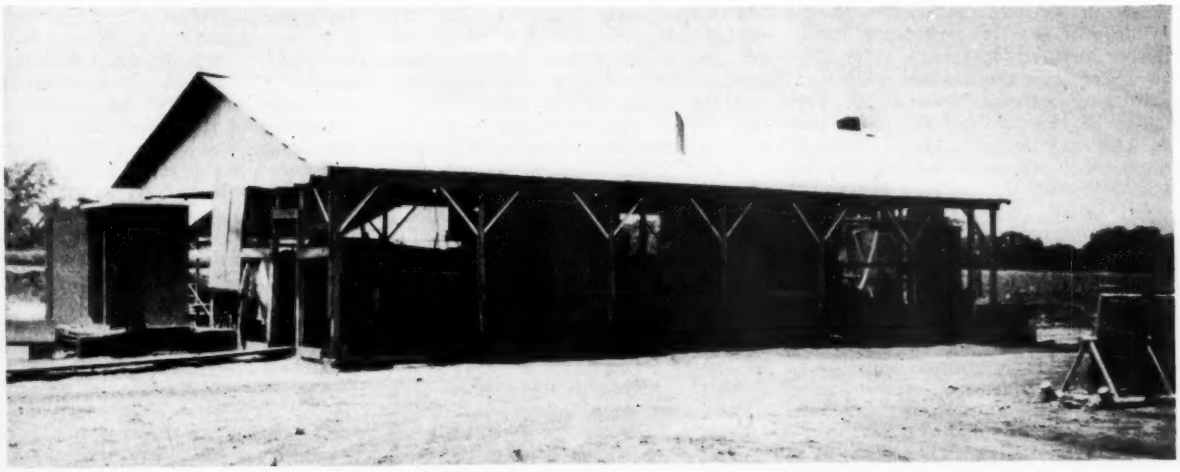
Surface pipe in the well consists of 1,020 ft. of 16-in. casing. No intermediate string has been run and probably none will be inserted until the Springer shale has been penetrated.

Drilling progress proceeds at the rate of about 15 ft. per day. Physical examination of the hole shows the strata being penetrated to be approximately 22° off the vertical. No crooked-hole trouble has developed yet, but the reason for this is that a minimum of weight is being run on the bit when on bottom. The drill pipe in the hole is 4½-in. A.P.I.

Conditions in the Harrison well are comparable to those existing in the Rocky Mountain areas, where formations often are steeply tilted.

Unlike wells of the same depths in the West Texas areas, this Oklahoma deep test is being drilled with a "feather touch." The usual Parker procedure in deep-drilling areas where the formation is considered abnormally hard is to incorporate the use of as many as 18 or 20 drill collars for bottom-hole drilling weight. Quite contrary to this practice is that no more than four drill collars have been run in the hole on the Harrison. At all depths from one to four drill collars have been run, depending on the formation. This controlled drilling-weight technique has shown that such tilted strata in the Anadarko basin can be drilled successfully with a minimum of crooked-hole difficulty.

Building that houses the two diesels and two large generators furnishing power for electric drilling rig on Ohio Oil Co. No. 1 Harrison



Programed for a depth of 15,000 ft., the company has rigged up with what is probably the tallest derrick presently in operation in Oklahoma drilling fields. A distance of 186 ft. is measured from the ground level to the top of the water table.

Equipment on the rig is driven by electric power generated by two large 9-by-12-in. Superior diesel engines. These eight-cylinder engines, each of 350 hp., furnish power for two large Westinghouse 250-kw. generators. Developing 200 volts and 1,250 amp. at 1,200 r.p.m., the generators furnish the electricity for the draw works, two slush pumps, and one large slush pump used for drilling mud mixing only.

Making a trip on the well is done with help of an extra derrickman when coming out of the hole. The amount of pipe handled in the large derrick warrants the use of the second man. On the way back in the hole, however, only one derrickman is needed. At the present depth there is no excess strain evident when the powerful rig starts the upward journey.

Present on the location since surface hole was first started is a Baroid well-logging trailer and crew. This practice is rather common in the Gulf Coast regions where drilling depths average below 12,000 ft. Constant well logging on holes in Oklahoma is somewhat unusual at present, but will probably expand as drilling depths gradually become deeper.

One noteworthy item on the Parker rig is a safety bulletin board installed directly behind the driller near the "knowledge box." This bulletin board is complete with up-to-date safety bulletins and additionally has a standard form which all members of the crews check before continuing drilling operations as they come on tour. Safety engineering definitely is a necessary factor on wells of this depth where much larger and more powerful equipment is used.

Several miles to the north of the Ohio well is the North Lindsay field. Lying partly in Garvin County and partly in McClain County the North Lindsay area also represents much deeper drilling operations. The discovery well in the Lindsay field was drilled by Loffland Brothers, Inc., for Cities Service Oil Co. The well, the A Lawson, wis drilled to a total depth of 10,995 ft. Since the discovery well another has been produced, the 1 Odom, and the field is now a definite producing area and no longer a site for wildcats. Average drilling depths will be around the 11,000-ft. mark.

One recent contractor in the field, drilling his own well, has worked along with a rig of shallow drilling capacity and with a minimum of surface pipe in the hole. Rather amazing results have been obtained with old-style, well-dated drilling units. From top to bottom the well has been drilled as a tight hole, but field reports are that the well is below 11,000 ft. The rig on the well is an old-type draw works capable of drilling only to depths of 7,500 ft. Other equipment on the location is also right in line with supposedly "incompetent" draw works. Another outstanding fact in the drilling of this well lies in the report that approximately 10,000 ft. of the total depth at present is supposed to be "open hole." The contractor is said to have run only 1,000 ft. of surface pipe in his well as compared with 5,000 ft. of surface pipe in nearby wells.

While the North Lindsay field is not considered the deepest drilling area in Oklahoma, it will be considered, if the present development expands, one of the large "deep drilling" pools in the Mid-Continent.

A beginning of deep development on a large scale was encountered by contractors who operated in the South and West Moore fields. Drilling in that area was around the 9,500-ft. level and continued to be active for a rather long period. The famed and giant-sized West Edmond field also consisted of slightly deeper drilling than many contractors had engaged in prior to discovery of that field. Now that postwar operations are on a gradual increase, it is visibly ascertainable that future fields in Oklahoma will include deep producers from levels never before produced on a large scale in the Mid-Continent.

Sand Exclusion Papers Feature A.I.M.E. Meeting

LOS ANGELES. — Sand exclusion was discussed by three speakers —R. F. McArthur, Kobe, Inc.; J. O. Hills, General Petroleum Corp.; and E. L. Davis, Signal Oil & Gas Co.— at a recent meeting of the Southern California section of the junior American Institute of Mining and Metallurgical Engineers.

McArthur described laboratory investigations to determine maximum slot size which would exclude given sand-grain sizes. Generally speaking, he said, a slot width that is twice the size of the grain will result in a bridge that will exclude the sand.

If sand is graded, then a slot width of twice the grain size at the 10 percentile point, as determined by Tyler Screen analysis, will exclude the sand, he added. As a corollary to this general rule, the maximum pack-grain size to exclude sand with a gravel-pack or gravel-wrap liner is 13 times the 10 percentile grain size. At least a 6° undercut is required to prevent bridging in the slots of the slotted liner. McArthur said an open area of 2-3 per cent of the liner area is more than 80 per cent as permeable as an open hole with the same size liner.

Hills told of experience with sand exclusion in actual wells. Operators use as large perforations as possible to obtain the highest productivity index and still exclude sand.

Perforations are usually larger than indicated by screen analysis, he said. Since sand analyses are of little value when few or no cores have been recovered, the size perforations are chosen by experience in other wells, he concluded.

Davis pointed out that liners when pulled are found to be largely plugged. For a given production rate, the velocity is higher with fewer perforations open, he continued. High velocity causes erosion of perforations, permitting sand to enter.

Davis said sand will not move when velocities are low. Therefore, he said, large perforations can be used successfully provided most of them are open and production rate per foot of perforations is low.

After the prepared papers were presented, the group discussed the importance of fluid viscosity as related to sand-carrying power. The opinion was expressed that wells often develop sand trouble when water cut increases.

A.P.I. Nominating Group Appointed by Boyd

NEW YORK. — A new method of nomination for the American Petroleum Institute, authorized by the board of directors at the recent Dallas meeting, was announced last week by William R. Boyd, Jr., president, with appointment of a committee on nomination.

Heretofore, a nominating committee has been appointed from the floor at the opening session of the board of directors at the annual meeting of the institute. The new committee on nomination is charged to meet before the annual meeting, to which it will report, and agree on nominees for officers, members of the executive committee, and members of the committee on membership. Members of the institute are permitted by the by-laws to make suggestions for nominations to the new committee.

Members of the new committee on nomination are: Robert E. Wilson, Standard Oil Co. of Indiana, chairman; Robert H. Colley, Atlantic Refining Co.; H. D. Collier, Standard Oil Co. of California; J. C. Donnell, II, Ohio Oil Co.; W. H. Ferguson, Continental Oil Co.; Walter S. Hallanan, Plymouth Oil Co.; B. A. Hardey, president, Independent Petroleum Association of America; George A. Hill, Jr., Houston Oil Co. of Texas; B. Brewster Jennings, Socony - Vacuum Oil Co., Inc.; Reese H. Taylor, Union Oil Co., and H. C. Weiss, Humble Oil & Refining Co.

Stop Profit Leaks From Poorly Defined Pressure Bases

by John P. Squier

EACH year some uninformed operators lose money through an uninterested attitude toward the use of correct gas-measurement and accounting procedures. One of the most frequent causes of errors and losses is the incorrect use of an established pressure base from which the deliveries are computed. In some cases there is no establishment of pressure base, and this item is left to the discretion of the person measuring the gas.

Pressure base to gas measurement can be compared to gallons or barrels in liquid measurement. When a specific pressure base is established, that pressure base determines the unit pressure conditions of a cubic foot of the measured gas. Naturally the first thought of many is that a cubic foot is of a definite volumetric size and cannot be altered. Due to the compressibility of gases this is far from true. At a gage pressure of 5,000 psi. the amount of regulated burner gas recoverable from a cubic-foot container is approximately 340 times the amount recoverable if pressure was only a few ounces above the pressure of the atmosphere. Of course, this is an exaggerated example, but knowledge of the correct pressure base to use is essential for proper operating procedures, and inattention will sometimes prove costly.

Computing Tax

State conservation and tax departments usually establish a pressure base to be used in computing deliveries for tax and record purposes. Such a specified pressure base is generally not the same as specified in the oil and gas lease or contract. In fact, most governmental specifications result in a higher computed volume than deliveries computed according to lease provisions and a lower computed volume than deliveries computed in accordance with specifications in contracts covering pipe-line sales or purchases. Some operators compute all natural-gas volumes to the governmental established pressure base. All royalty, working-interest payments to sellers, and receipts from purchasers are computed from volumes at this same pressure base. This procedure is usually erroneous, since state specifications are compiled to establish tax rates and comparable volumetric deliveries based on the state's established pressure base.

A specific example will show the need for more attention to this phase of gas measurement by some operators. The established well-head delivery price in a specific area or field is 5 cents per M.c.f. at a pressure base of 2 psi. + 14.4 psi. (16.4 psia.). The governing body in that state has established a pressure base of 10 oz. + 14.4 (15.025 psia.). If the gas volume is computed at 10 oz. + 14.4, and royalty and working interest obligations specify payment at the prevailing field rate, the volume computed for this purpose will be 11 per cent less than the volume computed for state taxes and conservation reports. Therefore, a continuous overpayment of royalty and working interest of 11 per cent is always effective.

Naturally, when an accounting error of the above nature is discovered after many months or years of erroneous accounting, and even if the producer takes a lenient attitude by waiving previous resultant overpayments, the immediate and subsequent reduction in such payments by using correct procedures will often create a dissentive situation among the land owners. This condition is not beneficial to future operations and may result in court action. At any rate, the producer will no doubt figure the amount which could have been paid according to lease provisions and realize that over a period of years considerable loss has been effected.

In making a gas connection it is economically essential that a thorough understanding of all contractural obligations be known. Price quotations for natural gas or any other compressible fluid must be stated in conjunction with the pressure base, i.e., monetary price per M.c.f. and pressure base. If the cubic foot of gas is not defined by pressure base in the agreement, the result would be similar to an oil-sales transaction wherein a price would be established, but the unit amount received for such a price omitted.

Pressure-base errors also occur in measurement, dependent upon the locality. Usually, contracts covering coastal operations are based on an atmospheric pressure of 14.7 psi., the well-head price being quoted at 2 lb. + 14.7. This is due to the fact that the average sea level barometric pressure is approximately 14.7 psi. In areas of higher altitudes where the barometric pressure is 1 or 2 lb. lower than the barometric pressure at sea level, a considerable error is sometimes produced by not considering such conditions. State regulations in regard to pressure base and price are usually derived from an average of the entire area concerned.

A precise method for the evaluation of gas for accounting purposes is by the heating value delivered, and this procedure is becoming standard in some localities. For each 1,000 B.t.u. delivered a rate is established. Under this system the pressure base does not enter into the accounting procedure, but only in the measurement computations. For example, the average B.t.u. value of a cubic foot of natural gas is approximately 1,000 at 14.4 psi. (average atmospheric pressure). Therefore, it is only necessary to compute the total volumetric delivery in cubic feet at that pressure. Knowing the number of cubic feet delivered, the value of the gas can be determined by applying the price per 1,000 B.t.u.

Natural-gas prices are steadily increasing, and those who deviate from adopted procedures in gas accounting and measurement probably will be confronted with an increased monetary loss in gas revenue. Higher gas prices will tend to awaken many operators and producers, but many more will continue to slumber through an era of deserved increased revenue from a product that has ceased to become a necessary evil in petroleum production.

BOOKS

RETAIL MARKETING OF FURNACE OIL. By Harvey P. Bishop. Published by Division of Research, Graduate School of Business Administration, Harvard University. 42 pp. 50 cents.

This pamphlet is the result of a short study into the practices and problems of the retail marketing of furnace oil for home heating. It covers the subject in broad terms, attempting to define issues rather than to offer categorical answers.

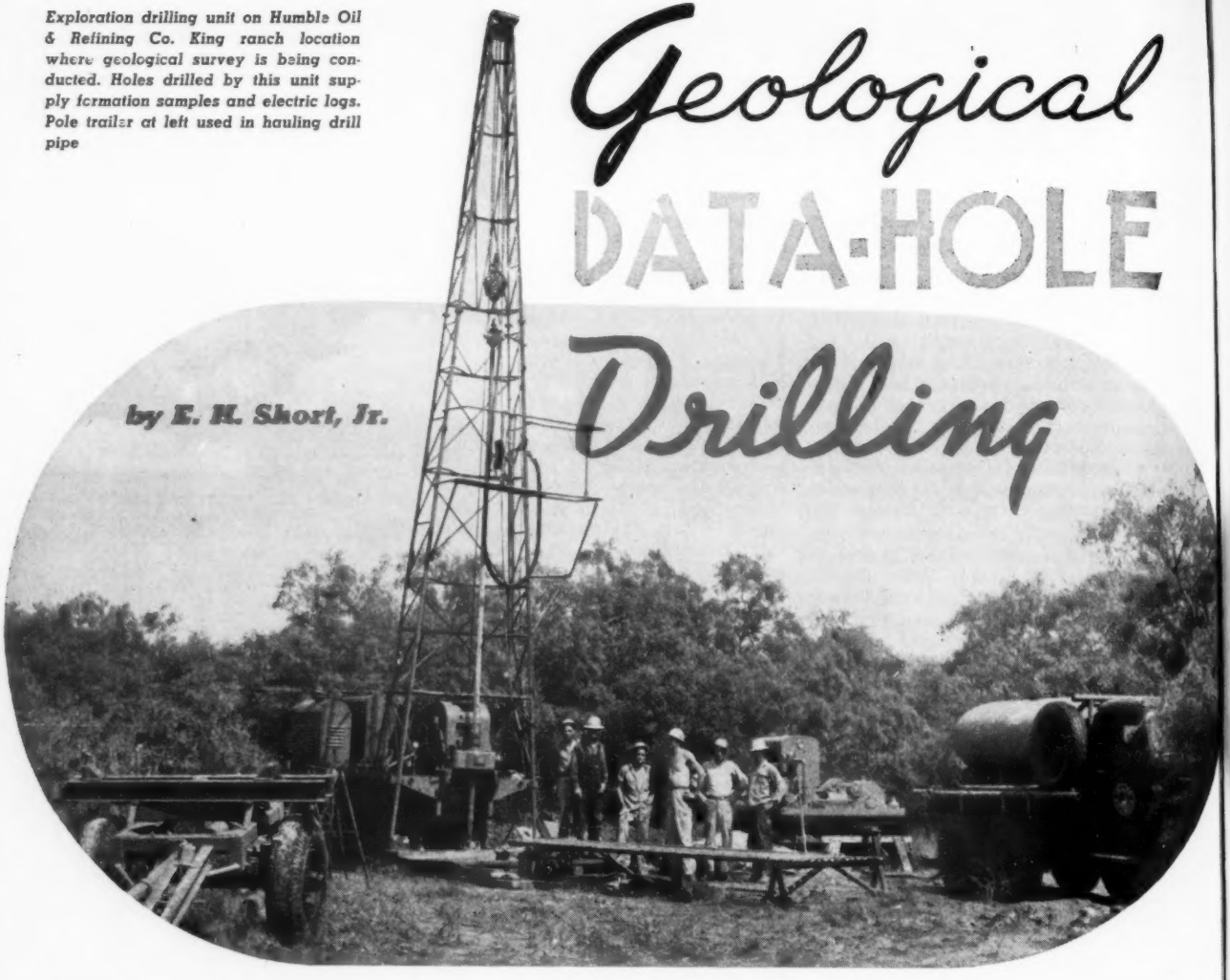
WHEN THE OIL WELLS RUN DRY. By Walter M. Fuchs. Published by Industrial Research Service. Dover, N. H. 447 pp. $3.75.

There have been many books on oil. These have dealt with prospecting and production, transportation and refining, and with the nature of petroleum products. Others have dealt with the history of oil; still others with manufacturing synthetic oil in industrial plants. But in the present work the author has attempted to write a guide book that would present in one convenient volume an integrated picture on the subject of oil. To quote from the preface, this book should be a "balanced presentation of important social, political, and scientific oil facts written in an easily readable and generally understandable manner" which could serve a broad audience as a handy reference book.

The first chapter is historical, the second political, and the third has to do with the domestic oil business. The book gets its title from the fourth chapter, which treats of the technological phases of oil production. Other chapters deal with the part science is playing in the oil business, with synthetic production, and with a "look see" into the future.

Geological DATA-HOLE Drilling

by E. H. Short, Jr.



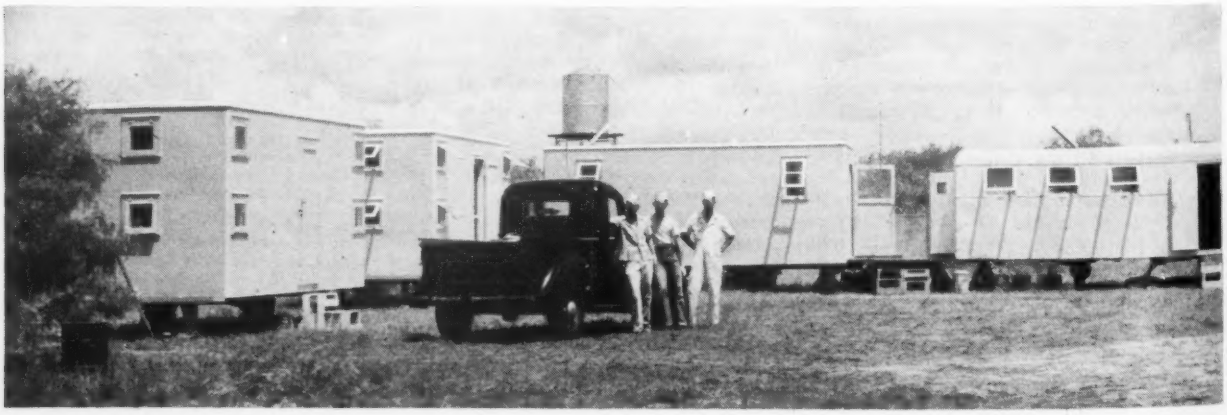
Exploration drilling unit on Humble Oil & Refining Co. King ranch location where geological survey is being conducted. Holes drilled by this unit supply formation samples and electric logs. Pole trailer at left used in hauling drill pipe

INSIDE the guarded enclosures of the fabulous million-acre King ranch in southeastern Texas, Humble Oil & Refining Co. is conducting an extensive geological survey.

Involved in this survey, which at the present time, is centered in that portion of the ranch lying approximately 10 miles northwest of Kingsville, is the drilling of a number of holes for the purpose of obtaining formation samples and electric logs.

During the past few years there has been a notable advance in exploratory drilling rigs and the operational technique employed in this type of work. While holes drilled for the purpose of obtaining cores, formation samples, electric logs, and seismic data are of obvious importance in the ultimate finding of oil, very little mention has been made of the mechanical progress achieved in exploratory drilling rigs. Possibly this is due to the attention commanded by the advance of the more powerful deep-drilling production rigs.

For the particular type of exploratory drilling required by Humble on the King ranch work, Failing Explo-



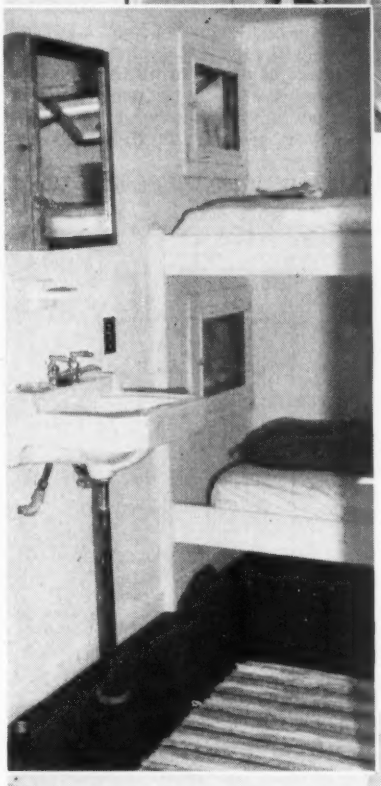
ration & Drilling Co., Houston contractor, has assembled one of the most modern postwar outfits yet placed in operation. From the improved type of drilling equipment to the modern Failing-designed living quarters provided for the field personnel, the whole new setup was built to obtain maximum efficiency from both the equipment and the men who operate it.

The exploratory drilling setup being used in this area is a self-contained unit. Through careful planning and subsequent provisions in respect to: replacement materials and parts which might be required during the work, adequate supplies and provisions, comfortable living quarters for personnel, and office and laboratory facilities, a degree of permanency has been imparted to the unit as a whole. Yet it is highly mobile, and capable of rapid transportation through sand and brush to distant locations.

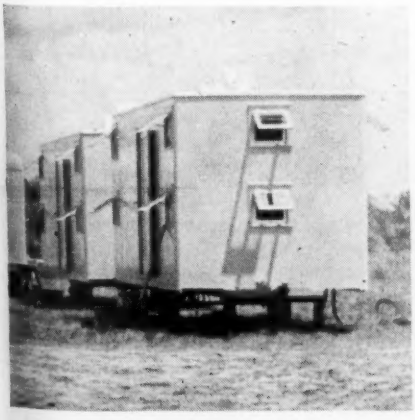
The drilling rig being used, built to the Failing specifications, is a George E. Failing Holemaster special Model 1500 which is capable of drilling to a maximum depth of 2,000 ft. This rig has a number of improvements over the older-type equipment used in work of this kind. The 4½ by 6-in. Gardner-Denver FXG mud pump, powered by a General Power Unit motor, is separate from the drilling rig, being mounted on a trailer. By scooping out for the wheels of the trailer the pump level may be lowered to obtain greater pump efficiency. Many older types of rigs drive the circulating pump from the rig truck motor. The maximum pump pressure on work of this kind runs around 400 psi., and the capacity at this pressure is approximately 120 g.p.m.

The drilling rig is equipped with a 38-ft. mast which will accommodate four lines. The mast is raised and lowered by means of hydraulically operated cylinders. Prewar masts on units of this kind are only 27 ft. in height, and the additional 10 on this

(Continued on page 93)



Bottom, left: These specially designed trailers provide sleeping and dining accommodations equivalent to best of hotels. Top: Interior of kitchen trailer showing butane operated refrigerator and stove. Left: Interior of sleeping trailer—note plug-in for electric razor at wash basin. These trailers have shower, clothes closet, wash basin, inner-spring mattress, radio, hot and cold water. Bottom: "City" utility system; butane trailer at left, water tower in center and electric power plant at right



Improved Design of Houdry Reactor Results in Higher Gasoline Output

by R. C. Lassiat and C. H. Thayer†*

A MAJOR improvement in the Houdry catalytic-cracking process, resulting in both lower operating costs and increased gasoline production, has been effected by redesigning the reactor tubes and changing the physical composition of the catalytic mass.

The new design, developed by engineers of Houdry Process Corp. and Sun Oil Co., is adaptable to all standard Houdry reactors and its advantages have been fully demonstrated by a year's operating experience with a 12-case cracking plant at Sun's Toledo, Ohio, refinery. A similar 12-case, 20,000-bbl. plant at Sun's Marcus Hook, Pa., refinery has also been equipped with tubes of the new design. In addition, Sun has recently completed the conversion of a third 12-case plant with tubes containing further improvements over those installed in the first two units.

Cost of Changing Catalyst

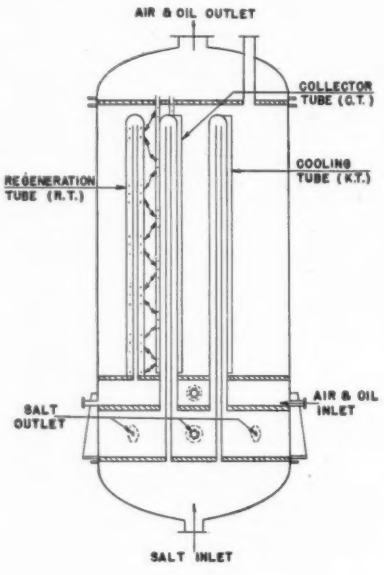
The cost normally involved in changing catalyst—an item of importance in the operation of Houdry fixed-bed plants—has been markedly reduced by the improved design. Moreover, the new tubes are sturdier and will give longer life, and metal temperatures are lower than heretofore experienced under similar operating conditions.

With the new design, increased production of gasoline results from higher onstream efficiencies coupled with more even distribution of oil vapor and regeneration air through the catalyst and the presence of a greater supply of heat within the catalytic mass for the cracking reaction. The increased heat supply is provided by a granular, chemically inert material mixed with the catalyst, which has the effect of augmenting the heat capacity of the catalytic mass, as well as other advantages which are described in greater detail in this article.

All distributing orifices and shields, under the new design, are contained on tubes which are easily removable from the top of the reactor for inspection when changing catalyst. Thus, complete cleaning of all distributing elements is possible at no loss of time, on every catalyst change, resulting in improved distribution of air and hydrocarbon vapors. Existing Houdry reactors can be converted to the new type simply by changing tubes, jacket liner and top tube sheet. Since these items ordinarily have to be renewed after 5 or 6 years' operation, no additional expenditure is involved

CHANGES in the physical composition of the catalyst and improved new design of reactor tubes have resulted in important improvements in the operation and results from the Houdry catalytic cracking process, pioneer in commercial catalytic cracking. The new design cuts sharply the cost of changing catalyst. Shutdown time is reduced; heat capacity of catalyst is increased by mixing with an inert material of high heat capacity. All tubular elements handling air and oil vapors are easily removable from the catalyst case. Coke-burning capacity is increased and maximum temperatures during burning are reduced by the new design.

*Houdry Process Corp. †Sun Oil Co.



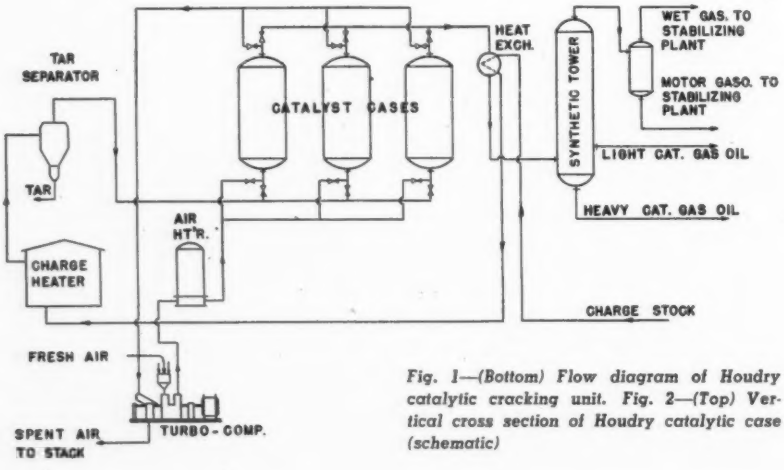


Fig. 1—(Bottom) Flow diagram of Houdry catalytic cracking unit. Fig. 2—(Top) Vertical cross section of Houdry catalytic case (schematic)

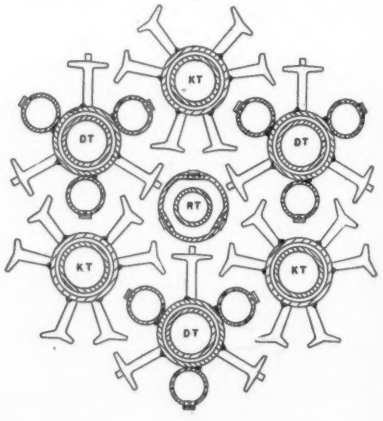


Fig. 2A — Typical tube pattern of Houdry catalytic case

beyond the normal cost of replacement by making the conversion at this time. Since the new tube design results in an increased volume of catalyst space, the addition of inert material does not change the active catalyst capacity.

Practice in Changing Catalyst

In Sun's operations with the previous design of reactors, catalyst life when producing motor gasoline has averaged about 18 months. Starting with a new plant, the usual practice when making the first catalyst change has been to "shake" out the catalyst. This is accomplished by removing the top head, top catalyst tube sheet and the regeneration tubes which can be unscrewed from the top. Vibrators are then placed on the cooling and collector tubes which remain in place, and the catalyst falls out of the bottom of the reactor through the holes provided by removal of the regeneration tubes. About 18 months later, when second catalyst change is made, all of the tubes are removed from the cases for cleaning and repair. This work consists mostly of removing small particles of catalyst, iron oxide, etc., which accumulate between distributing tubes and orifice protecting shields during operation, straightening out tubes and repairing threaded parts which may have been impaired during dismantling.

When making catalyst changes it is general practice to shut down half of the reactors in a unit and, by changing full throughput through the remaining half, the over-all gasoline production during the catalyst change period is about 75 per cent of normal. The shut-down time for one set of six reactors of the previous design for the first catalyst change has averaged 20 days with a minimum labor requirement of 4,000 man-hours per case. The second catalyst change, when all of the tubes are removed, has usually required a shut-down time of 6 to 7 weeks, during which 12,000 man-hours are required per case. A few months ago, by efficient scheduling of all operations, this job was done on a six-case plant of the previous design in 29 days from offstream to onstream.

Shut-Down Time Reduced

Catalyst changes, whether it be the first, second or any subsequent change, with the new type of tube require only 7 to 10 days from stream to stream and 1,200 to 1,500 man-hours per case. Inasmuch as all of the tubes which contain distributing orifices are easily removable from the top of the reactors, distribution of oil vapors and air through the catalytic mass can be maintained almost perfectly without the necessity of removing any of the salt tubes. An improved design has been made for the periphery of the reactors to eliminate any tendency for undue heating of

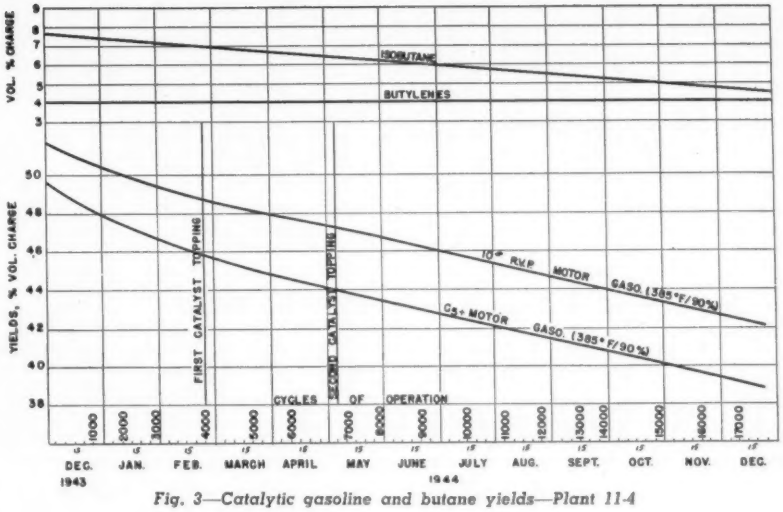
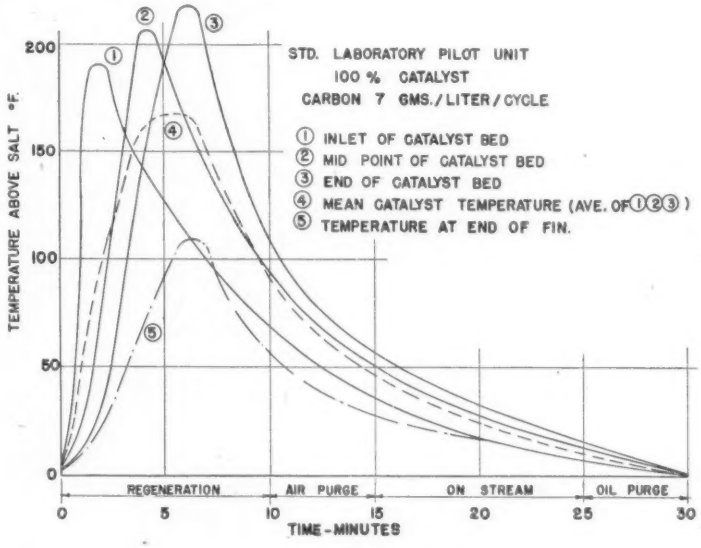


Fig. 3—Catalytic gasoline and butane yields—Plant 11-4



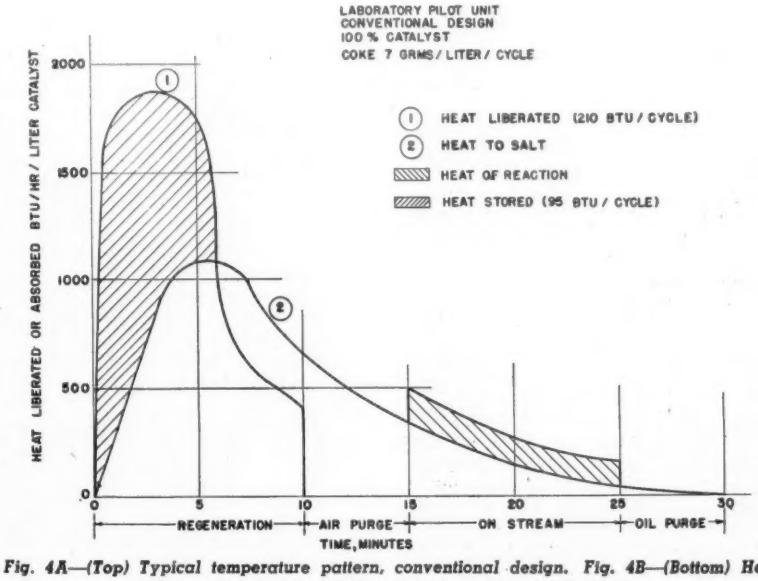


Fig. 4A—(Top) Typical temperature pattern, conventional design. Fig. 4B—(Bottom) Heat liberated and absorbed during cycle, conventional design

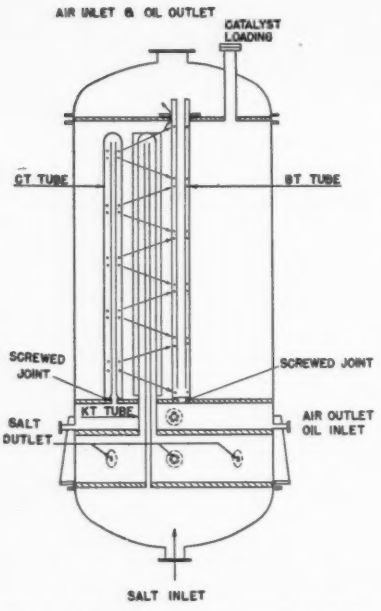


Fig. 5—Longitudinal section, modified design

the liner, border tubes or the shell of the reactors.

As will be seen in the following descriptive section, the interlocking features of the fins have been eliminated to facilitate removal of catalyst and the new fins are extremely sturdy and heavily welded to the cooling tubes. Due to the heavy section of the fins, the additional welding and the reduced surface, the metal temperatures are considerably reduced. The change in design, as shown by results currently obtained in Sun's operations, has resulted in increased production of gasoline through maintenance of the distributing elements in better condition and higher onstream efficiencies.

Design Factors of Reactors

The fixed-bed principle, as utilized in the Houdry process, is familiar to the oil industry and has been described at length. Briefly, reactors are usually arranged in groups of three, oil vapors being circulated through one of the reactors, while air is passed through another to burn off the coke deposit on the catalyst by a former "onstream" period. The third reactor, at the same time, undergoes the processes of oil purge, air purge and valve changing.

Necessary piping and motor-operated valves insure the continuity of oil and air flow through the system. The valves are operated by an automatic cycle timer and proper electric interlocks preclude mixing of streams. A molten salt circulated through all reactors removes the excess heat of combustion of the coke and controls the general temperature level. Fig. 1 shows a simplified flow diagram of a typical Houdry fixed-bed unit.

The design of the fixed-bed reactors is governed by the following factors:

1. Rate of heat removal of the order of 10,000 B.t.u.'s per hour per cubic foot of catalyst space.

2. Temperature control during the cracking period.

3. Limitation of maximum temperature, during regeneration period, below values detrimental to catalyst life.

4. Catalyst bed depth and accurate distribution of vapors and air.

5. Mechanical considerations of assembly, thermal expansion, catalyst loading and unloading, etc.

Figs. 2 and 2a show the general arrangement in vertical and horizontal sections of a type of reactor widely used.

Mechanism of Heat Transfer

Fig. 4A shows a typical temperature pattern obtained during a complete cycle in a laboratory pilot unit similar in tubular arrangement to conventional commercial reactors, and where accurate temperature measurements are taken. The chart shows that the rate of combustion is rapid as indicated by the fast increase of temperature during regeneration and that the progression of combustion through the bed occurs in a fairly narrow zone as the maximum temperatures are attained at the end of the bed after combustion is complete at the front. It also shows temperatures attained at the top of the fins having the design shown in Fig. 2A.

On Fig. 4B are plotted the rate of heat liberation as measured by the analyses of the regeneration flue gas and the rate of heat absorption as measured by the temperature differential between catalyst and cooling medium. At their point of intersection the area between the two curves represents the total heat absorbed by the catalyst and the finned elements. This heat is released subsequently during the air purge and the "onstream" period by the salt and also the heat of reaction.

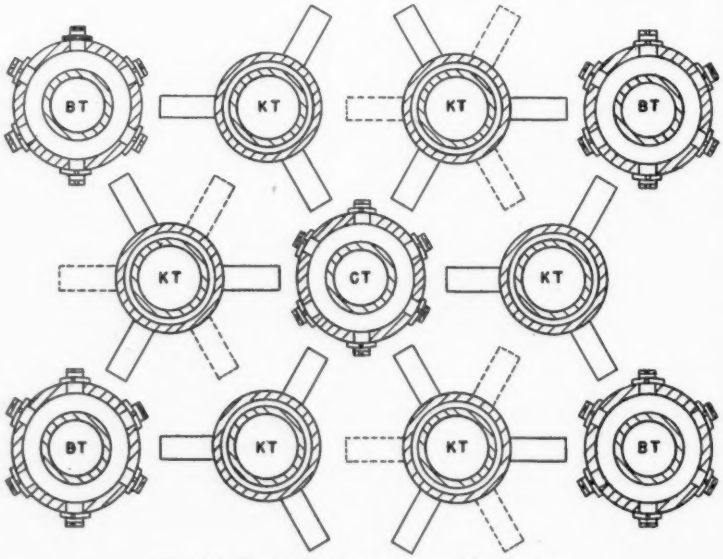


Fig. 5A—Typical tube pattern, modified design

Several years of commercial operation have shown that in so far as temperature control, yields and catalyst life are concerned, the design has been satisfactory. Results predicted in laboratory evaluations have been maintained over long periods of time, as illustrated by Fig. 3 which shows a typical plant performance diagram over a period of 12 months.

In this plant a heavy distillate obtained mostly from East Texas crude was processed for the production of debutanized gasoline and B-B cut. The reactor charge is a high boiling tar separator overhead of the following characteristics:

Per cent over	Temp., °F.
Initial	430
5	525
10	575
30	675
50	730
70	785
90	875
95	915
E.P.	1,000+

New Simplified Design

The analysis of heat transfer in the conventional reactor and the study of the difficulties encountered in maintenance and changing of catalyst have resulted in the development of a new simplified design of the following characteristics:

1. Cooling surface substantially decreased and interlocking of fins eliminated to insure free flow of catalyst. (See Fig. 5). As seen by the temper-

(Continued on page 95)

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Capacities of Spherical Tanks

by Louis T. Monson

THE accompanying chart is useful in determining the volumetric content of spherical tanks with an accuracy of within 1 per cent. If the internal diameter of any spherical tank is known, and if the height of liquid it contains has been determined, the volume of liquid in the tank can be quickly estimated from this chart.

The two sets of scales shown permit the determination of the total volumes of spherical tanks whose diameters are between 2 and 80 ft. Since spherical tanks are now being fabricated with diameters up to 65 ft., these scales are of sufficient range to cover all sizes of spherical tanks likely to be encountered in practice.

To determine the total volume of any spherical tank, locate its diameter inside the box of the proper scale. For convenience, the diameters are shown in units of ¼ ft. The graduations on the outside of the box scales show, respectively, volume of tanks of such diameters in gallons (at the left) and in 42-gal. oil barrels (at the right).

For example, a spherical tank 16 ft. i.d. has a total volume of approximately 16,100 gal., or 382 bbl., (from the second scale from the left). Calculated volume is 16,044 gal., or 382 bbl.

For a tank of 64 ft i.d., total volume, as estimated from second scale from right, is 1,027,000 gal., or 24,450 bbl. Calculated values are 1,026,826 gal. and 24,448 bbl., respectively.

To determine volume of liquid in any spherical tank whose total volume is known or has been determined as above, the chart on this page is employed. This shows what fraction of the total volume of a spherical tank is filled by any height of liquid in such tank.

For example, using the 16-ft. tank above, a liquid level of 4 ft. represents 0.25 the diameter of the tank. Find the 0.25 point on the bottom scale of the chart. Project this point upward to the curve, and then to the left-hand scale of the chart. It will be found to correspond to the value 0.156 on this left-hand scale, meaning that 0.156 of the total volume of the tank is filled when the liquid level is 4 ft.

Multiplying the fraction of volume filled, as just determined, by total volume of tank, as determined from second scale from left, gives volume of liquid in the tank. For the 16-ft. tank filled to the 4-ft. level, there are 0.156 × 16,100 gal., or 2,512 gal. (or 0.156 × 382 bbl., or 59.6 bbl.) of liquid in the tank. Calculated values are 2,507 gal. and 59.7 bbl., respectively.

Louis T. Monson graduated from Washington University, St. Louis, receiving a B.S. in chemical engineering in 1924 and an M.S. in chemistry in 1926. He is completing his twentieth year of service with the Tretolite organization and is now in charge of the laboratory of Tretolite Co. of California, at Los Angeles, conducting research and development principally on chemical demulsifiers for petroleum emulsions of both the water-in-oil and the oil-in-water type.

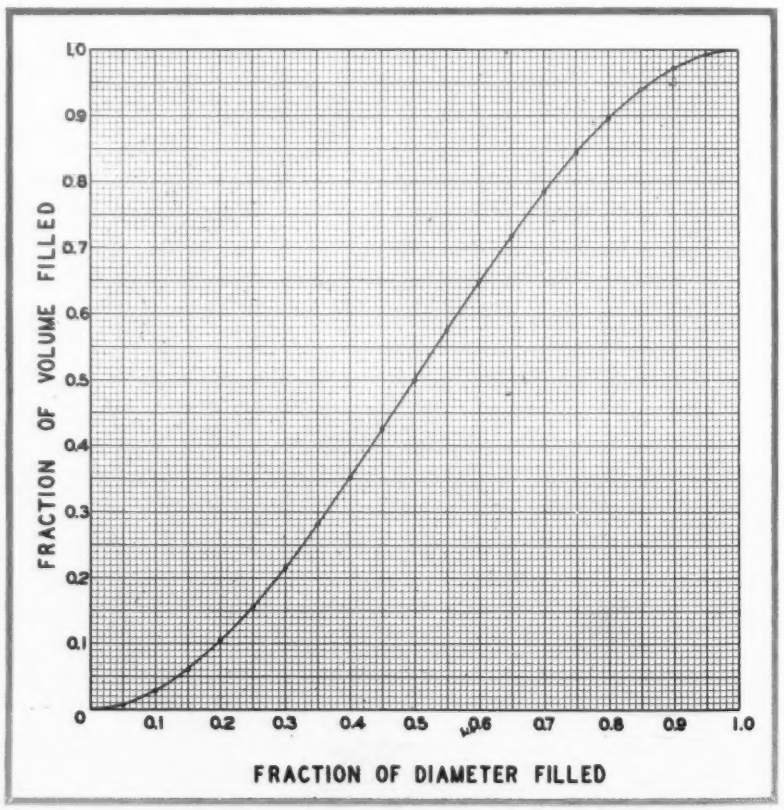
Similarly, if the 64-ft. tank is filled to the 48-ft. level (0.75 its diameter), it is 0.844 full, by volume. The volume of liquid is 0.844 × 1,027,000 gal. (its total volume, determined from second box scale from right), or 866,790 gal. (or 0.844 × 24,450 bbl., or 20,634 bbl.). Calculated values are 866,641 gal. and 20,634 bbl., respectively.

If only one spherical tank is to be considered, it may be desirable to prepare a uniform scale of length equal to the bottom scale of the chart, and marked in feet. If such scale is then superposed on the "Fraction of Diameter Filled" or bottom scale of chart, the latter can be used without the necessity of converting the height-filled value to fraction-of-height-filled.

Sixth in Series

This is the sixth in a series of charts, mostly of somewhat similar construction and mostly relating to the capacity of pipes and tanks, which have been prepared by the author and have been published in The Oil and Gas Journal at intervals. Earlier charts and the issues in which they appeared are: Capacity of Pipes, January 8, 1942; Capacity of Vertical Cylindrical Tanks, December 10, 1942; Capacity of Horizontal Cylindrical Tanks, October 7, 1944; Gravity Correction Chart for Emulsified Oils, February 1, 1940; and Reagent Feed Rate-Emulsion Composition-Net Cost Relationship, Chemical Resolution of Petroleum Emulsions, March 12, 1942.

Full-size copies of the present chart, as well as of any other chart in the series, may be obtained without obligation by addressing the author and company at 5515 Telegraph Road, Los Angeles.



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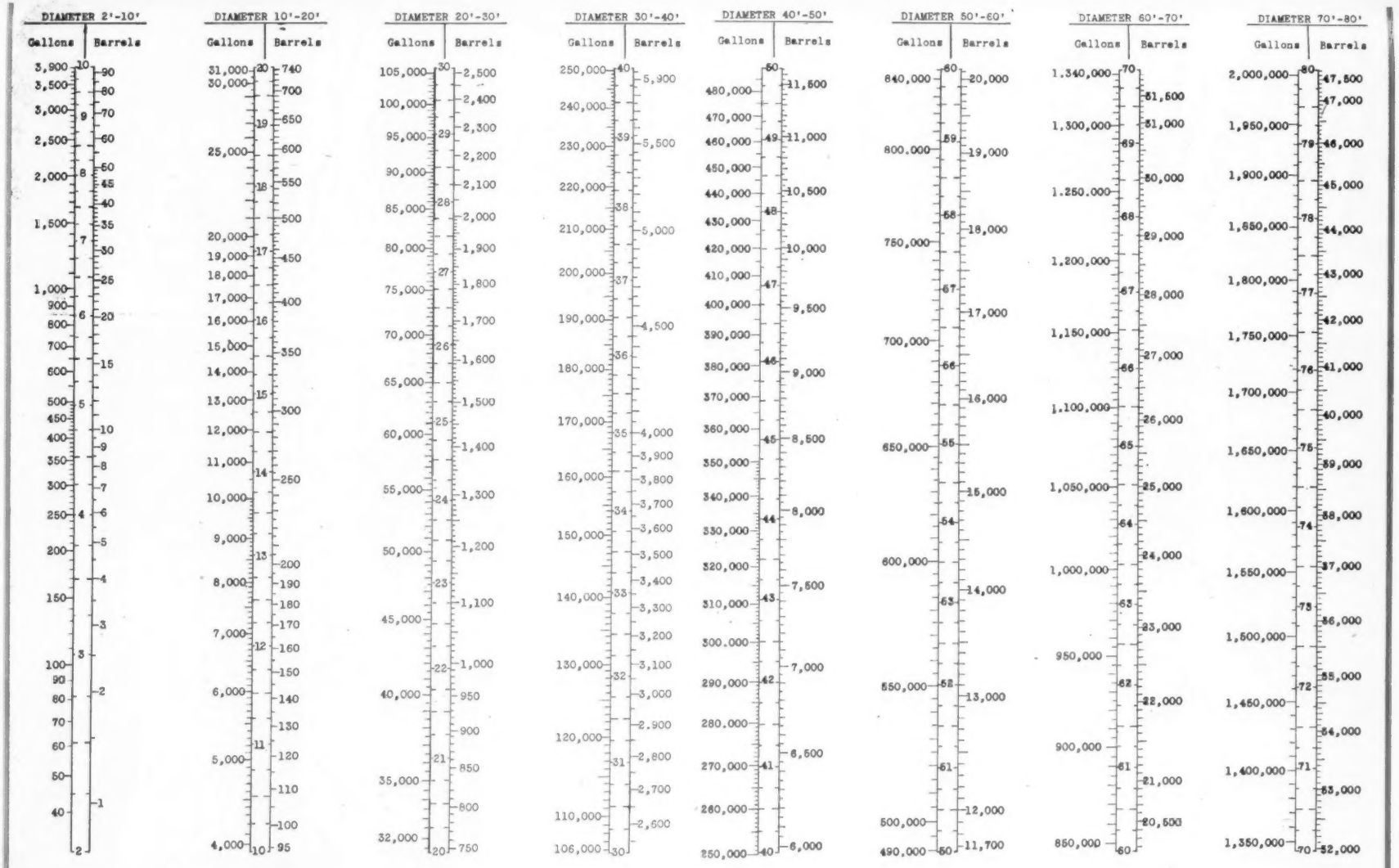

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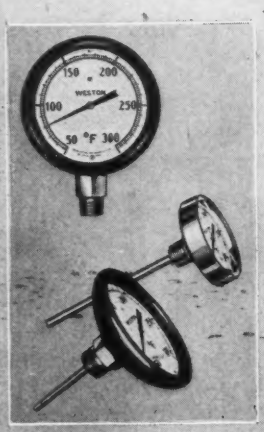

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Geological Data-Hole Drilling

(Continued from page 83)

mast permits the use of range 1 drill pipe rather than the old conventional 10 ft.

The power to the draw works is supplied by a 100-hp. General Power unit. The draw works has five speeds which enables the operator to select the drilling or hoisting speed most advantageous in respect to formation being drilled, or the depth of the hole when making trips.

The mast, draw works, and rotary are mounted on a tandem truck equipped with 1,000-18 single tires which greatly facilitates movement of the rig through sand.

The rotary table may be operated at a maximum speed of 350 r.p.m. but the normal operating speed in the present work varies between 100 and 125 r.p.m.

This rig is equipped with a 2⅞-in by 28-ft. kelly which is somewhat larger than the old-type kelly. The new-type kelly contributes toward faster drilling at the start of a hole, since it has more weight; and it also eliminates the twisting and whipping associated with the old type kelly.

Range 1, internal-flush-joint 2⅜-in. drill pipe and a 3½-in. by 20-ft. drill collar are used in this type of drilling. Fish-tail bits and an occasional drag bit have been found adequate for the formations on the King ranch.

In drilling these geological-data holes, an uncemented string of 6⅝-in. surface pipe is set at an approximate depth of 150 ft. Below this point a 5-in. hole is carried to the desired geological depth. The holes in this area make their own mud as a rule, but it is sometimes necessary to add Aquagel. The drilling of 5-in. holes, plus the close attention of careful drillers, is responsible for the fact that no difficulty is experienced with crooked holes. In the early days of the "yo-yo" core drill it was said that the driller was never quite certain whether his bit was pointed downward in an area approximately under the rotary, or about to emerge, pointed upward, from the slush pit.

Water for drilling operations is furnished from a 600-gal. tank spotted near the pits. This tank is mounted on skids and may be easily loaded on one of the trucks and taken to the most convenient water source, to be refilled by means of a small pump located on the skid.

The slush pits used in this type of drilling consist of two 8 by 10-ft. pits 5 ft. in depth. These are dug by means of winch-operated slip, or by hand.

Time required to drill a hole in this area depends not only upon depth, but the time taken by the geologist to assemble complete data. However, it can be said that the special design of the drilling unit is conducive toward fast operation. A round trip at 1,000 ft. for an example, requires only 1 hour. The speed of moving from one location to another is illustrated in a recent move which required only 8 hours. This time included the recovery of surface pipe, plugging of hole, tearing down, covering of slush pits, movement of equipment to the new location, rigging up, digging pits and setting 150 ft. of surface pipe.

Since the terrain of the King ranch is in its natural state, it is often necessary for the drilling crew to prepare a way through sand, and also dense vegetation. No one is permitted to bring firearms inside the ranch gates, so any rattlesnakes encountered during the moving operation must be dispatched with any convenient tool.

Perhaps the most interesting part of this exploratory layout are the living accommodations furnished for the crews and several Humble geologists. Everything has been provided to insure the maximum of comfort to the men—from inner-spring mattresses and radios to the best of food. There are three men in the personnel of this drilling unit who devote their full time to cooking and looking after the living quarters.

The office, sleeping quarters, and dining-room trailers were designed by Failing Exploration & Drilling Co.

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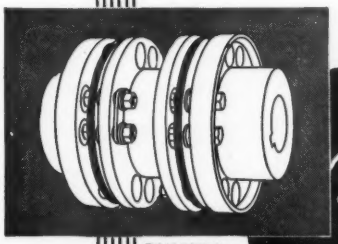

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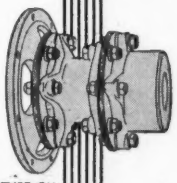

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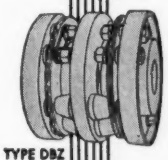

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for the work on the King ranch. Built by Rockport Boat Works, both the designing and the fabrication were accomplished in a period of only 35 days. The external portion of the trailers consists of tempered masonite, and the internal part of plywood and cypress. Brass screws were used in building the trailers, and the whole construction is corrosionproof.

Each sleeping trailer accommodates four people and is equipped with hot and cold water, gas, electric fans, and radios. The beds are double deck and ample windows have been provided to insure adequate ventilation. Furthermore, each sleeping trailer has a shower, clothes closet, and wash basin. These trailers have an inside dimension of 7 by 18 by 8 ft.

The dining-room trailer, which is also used for recreation, will accommodate 16 people at one meal. Four meals are served during a 24-hour period.

The kitchen is a well-arranged unit consisting of a stove, a mechanical refrigerator, 400-lb. capacity ice-storage chest, and grocery shelves.

Fuel for cooking and heating water (water heater located in dining room supplies hot water which is piped to sleeping trailers) is supplied from a butane tank.

Electricity is furnished to all units by a 1,500-watt, 110-volt a.c. Kohler full automatic light plant.

The King ranch permits the camp to be set within 1,300 ft. of a windmill, and ordinarily water is supplied to the camp from this source. It is pumped into the camp storage tank by means of a 1½-hp. Briggs & Stratton motor connected to a deep well pump. The pumping unit is mounted on the butane-tank trailer. The water-storage tank is mounted on a 16-ft. tower. This tower can be collapsed for transportation by removing a couple of bolts.

Butyl May Entirely Replace Natural Rubber for Tubes

DURING 1945 production of butyl rubber was 55,000 tons, and most of it was used in the manufacture of inner tubes. Because of its much higher resistance to the passage of air, some engineers predict that this all-petroleum synthetic rubber may entirely replace natural rubber for this application. Comparative porosity tests made on inflated inner tubes at 30 psig. show a drop of 9 psig. after 28 days for a natural rubber tube and no drop in pressure for a butyl tube.

Commercial production of butyl rubber was started by Standard Oil Co. of New Jersey in 1943 at Baton Rouge, and later in an affiliated plant at Baytown, Tex. Chemists of Standard Oil Development Co. discovered this synthetic rubber while working on the development of additives for motor oils. They found that isoprene and isobutylene form a rubber-like copolymer that possesses remarkable physical and chemical properties. It can be produced only in solid form, and ranges in color from water white to amber. Chemically, it is unlike any other type rubber, and shows only 3 per cent as much unsaturation as natural rubber. Therefore it is impossible to produce a hard rubber from butyl, and the vulcanizing time is longer than that required for natural rubber at the same temperature.

Butyl rubber is highly resistant to the effects of sunlight, weather, air, oxygen, and ozone. It is highly resistant to the action of acids and alkalies, to water, animal and vegetable oils, but not to petroleum oils. Its resistance to acetone, alcohols, aniline, ethylene glycol, phenol, furfural, and salts of copper, cobalt, or manganese is excellent. Its low dielectric constant and low power factor makes it an outstanding electrical insulation material, and its other properties insure long life.

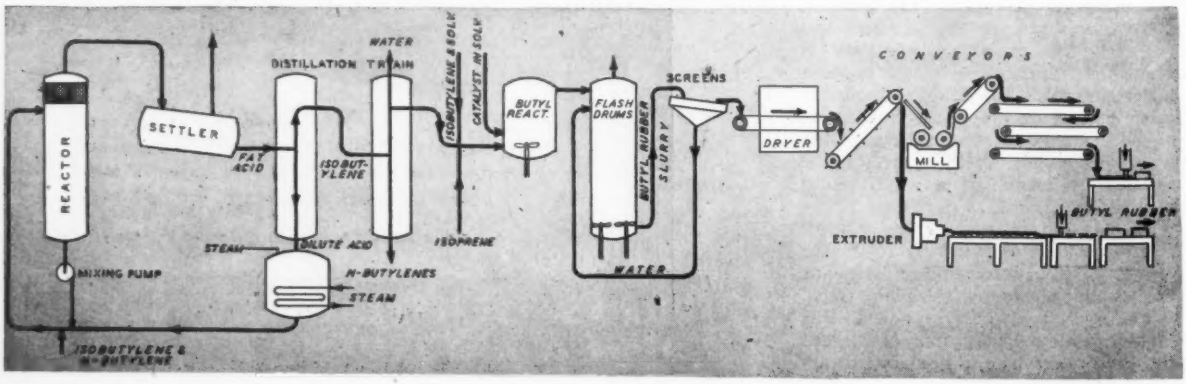
Other applications of butyl rubber include: High-pressure steam hose; diaphragms for steam controller valves; conveyor belts for hot materials; tank lining for resisting hydrochloric, nitric, or phosphoric acids; pump linings for corrosive liquids; gas masks; hose for water, air or chemicals; seals for cans or jars; and many more.

Butyl Manufacture

Basic steps in the manufacture of butyl rubber are shown in the accompanying flow chart. A mixture of isobutylene and normal butylene from the refinery is separated by the acid process. Isobutylene in solvent, isoprene, and catalyst in solvent are all precooled and fed simultaneously into the butyl reactor in proper proportion. Polymerization is carried on at extremely low temperature which must be maintained within a narrow range. Heat is generated during the reaction.

Many engineering problems had to be solved before the first commercial plant was built. The company built a pilot plant in 1939 to produce butyl in small batches. Special devices for lubricating and packing the propeller shaft at temperatures that would almost freeze alcohol solid had to be developed. Large sticky masses of raw butyl would tend to collect around the pipes and the propeller in the reactor and clog them. The walls of the vessel would become coated with this material. However, by 1941 a full-scale plant was under construction at Baton Rouge. This original plant has been expanded to three large units with a yearly design capacity of 33,000 tons. (A complete list of synthetic-rubber plants is given in the Annual Refinery Number of The Oil and Gas Journal, March 30, 1946.)

Fig. 1—Diagrammatic flow chart showing basic steps in manufacture of butyl rubber. (Courtesy Esso Oilways)



Improved Design of Houdry Reactor

(Continued from page 88)

atures indicated in the diagram, the peak and average temperatures of the fins are lower than formerly, thus the rate of oxidation is materially reduced.

2. Heat capacity of catalyst increased by mixing the pellets with a granular, chemically inert, cheap material of high volumetric heat capacity, which is easily recoverable during catalyst changes. The effect of this chemically inert material is to limit the temperature rise of catalyst during regeneration and the temperature fall during onstream periods.

3. All tubular elements conveying air and oil vapors to and from the catalyst space easily removable, being assembled by a threaded joint in the lower tube sheet. In the former design the air outlet tubes were welded to their respective salt tubes (D.T.) and hence their inspection and cleaning necessitated dismantling the reactors, including the rolled and welded joint of the salt tubes.

Fig. 5 shows the general arrangement of the new design as used in one of the Sun Oil Co. units which has been in operation for the past year.

Figs. 6A and 6B show the plot of temperatures during the cycle and the respective rate of heat release and heat absorption.

By comparison with the similar plots of Fig. 4A and 4B, the following conclusions may be drawn:

1. The over-all rate of heat transfer being decreased, the differential temperature between catalyst and salt is higher during the onstream period. This factor is corrected by adjustment of the other operating variables such as salt temperature and onstream pressures.

2. At the same carbon burnoff, the temperature differential during the regeneration period is lower, due to the increased heat capacity of the system.

3. The effect of the variation of heat transfer and heat capacity is shown by the large increase in heat absorbed in the catalyst during the regeneration period.

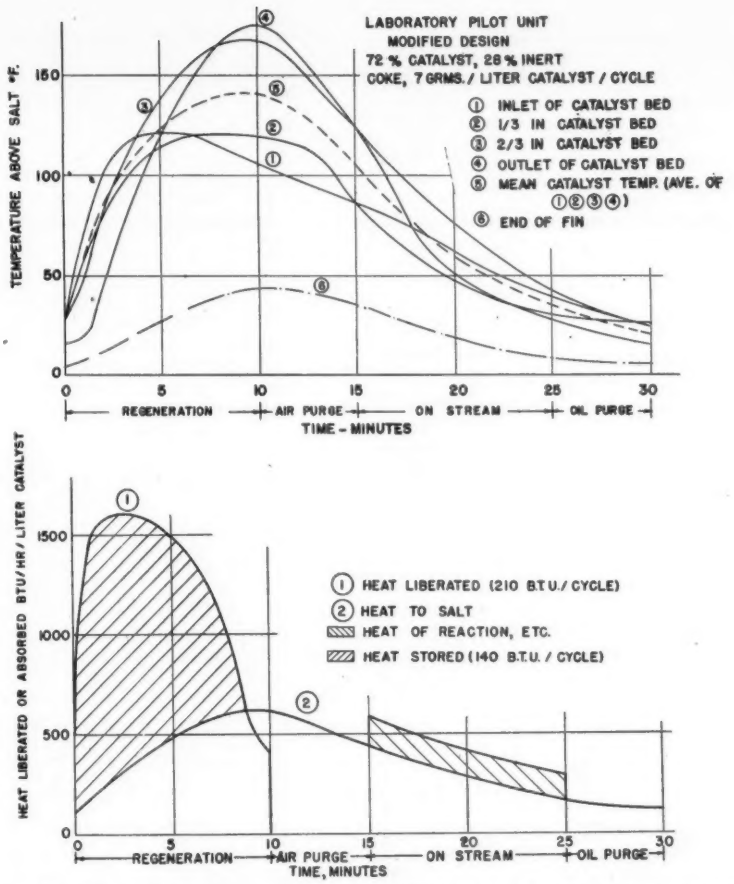
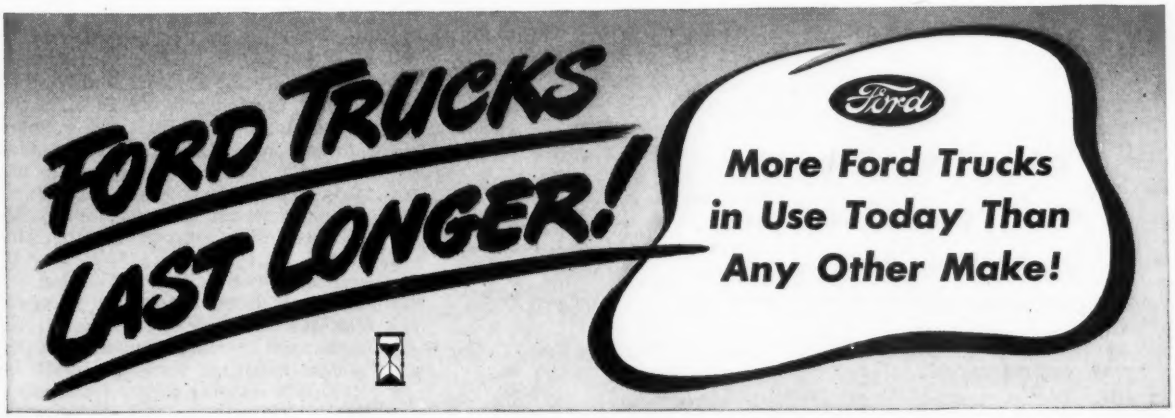


Fig. 6A—(Top) Typical temperature pattern, modified design. Fig. 6B—(Bottom) Heat liberated and absorbed during cycle, modified design

The experience of the first year of operation has led to certain additional improvements which are now incorporated in the latest units built, as follows:

1. Addition of fins on one-half of the K.T. tubes (shown in dotted lines on Fig. 5A) resulting in an increase of coke-burning capacity, all of the advantages of the design remaining.

2. Replacement of the packing insuring tightness of the top tube sheet against the tubular elements carrying oil and air to and from the top of the cases to the catalyst space by a stainless steel bushing providing enough clearance for passage of part of the air and vapors. Adjustment of orifice sizes governing the flow through the upper bed is made to insure proper distribution. With this scheme, the time of removing packing, as well as cost of replacement are eliminated.



QUESTIONS on TECHNOLOGY

by W. L. Nelson
Consulting Engineer

Reboiling by Circulating A Residue

In your discussion of the Carrier process on page 103, June 29, 1946, it occurs to me that recirculation of the high-boiling part of the material will keep vaporization from occurring. What about recirculation of reboiler oil?—F.D.S.

Recirculation of the residue of a tower through a heater and back to the feedplate does tend to suppress vaporization. Such an operation is indicated in Fig. 1; it indicates a 42° A.P.I. crude oil which happens to be available at 360° F. from exchangers. Such a temperature is not high enough to vaporize the 25 per cent of light gasoline that is desired and hence recirculation of the remaining 75 per cent of the crude oil is practiced. It is presumed that the flashed crude oil (75 per cent) that is recirculated can be heated to whatever temperature is required to raise the temperature of the whole mixture at the vaporizer to the temperature required for vaporizing 25 per cent of the crude oil.

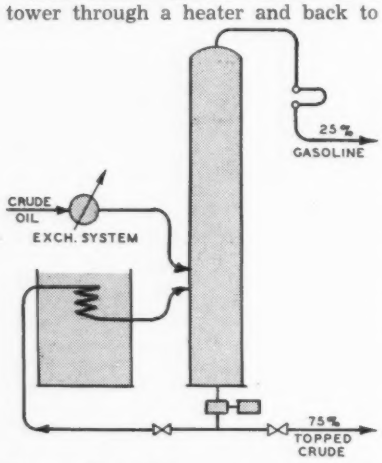


Fig. 1 — Flow diagram of a conventional "bottoms reboiler" system

Several cases were studied as shown in Fig. 2. Recirculations of 50, 100 and 200 per cent based on the crude oil are shown. The flash-vaporization curves of the mixtures are hypothetical at all points except where 25 per cent of the crude oil is being vaporized because the curves in all cases are computed for recirculation of a 75 per cent residue. Thus, the short curve on Fig. 2 which shows temperature required to vaporize 25 per cent of crude oil is the main or real curve. This curve indicates that recirculation of bottoms raises the vaporizer temperature as follows:

No reboiling	447° F.
Reboiling— 50 per cent	451° F.
Reboiling—100 per cent	457° F.
Reboiling—200 per cent	474° F.

Obviously from the simple standpoint of obtaining vaporization, it is better to heat the crude oil than to reboil the residue. Thus at the temperatures required at the vaporizer when reboiling is practiced, a single flash of the crude oil would vaporize the following amounts rather than 25 per cent:

447° F.	25% vaporized
451° F.	25.5% vaporized
457° F.	27.0% vaporized
474° F.	31.0% vaporized

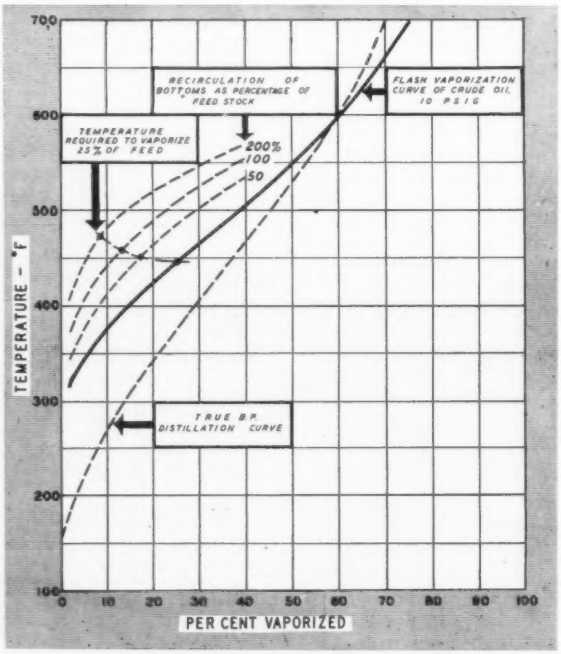


Fig. 2 — Temperatures required to vaporize 25 per cent of a 42° A.P.I. crude oil when recirculating various amounts of flashed crude oil (75 per cent) as a reboiler oil. (See Fig. 1)

Formula for Explosive Limit

Can you devise a formula for computing the explosive limits of air hydrocarbon mixtures? B.R.C.

Such a formula or rule has already been proposed by Thornton in Vol. 33 of Philosophical Magazine, page 190, 1917. His method is based on the theoretical amount of oxygen (and air) required for complete combustion. Thus, he finds that the lower explosive limit occurs when about twice as much oxygen as the theoretical amount required is employed. (He actually suggests twice as much oxygen less one molecule.) Likewise, he finds that when only about half enough oxygen (or air) is available, the mixture will not explode, or in other words, the high explosive limit occurs.

As an example, pentane requires eight molecules of oxygen per each molecule of pentane for complete combustion. If (16 — 1) or 15 molecules are provided (which means 15 × 5 or 75 molecules of air) the mixture will be at its lower explosive limit. The lower explosive limit will be:

$$\text{Lower limit} = \frac{1}{1+75} \times 100$$

$$= 1.41 \text{ per cent.}$$

Also according to his formula, the upper explosive limit is attained when only half enough oxygen is employed. This amount of oxygen would be four molecules, or the amount of air would be 4 times 5 or 20 molecules. Thus the upper explosive limit would be:

$$\text{Upper limit} = \frac{1}{1+20} \times 100$$

$$= 4.76 \text{ per cent.}$$

His method appears to work well for the lower explosive limit but the upper limit values are too low. It would seem that one-third or even a less amount of oxygen should be used rather than his figure of half. The upper explosive limit for pentane ranges from 4.75 to 7.5 by various experimentors, and the use of one-third the oxygen required rather than one-half would give a computed upper explosive limit of 7 rather than 4.76.

Undoubtedly exact equations or rules could be developed by applying the principles of empirical formulas to experimental data—and only a few hours of work would be required to develop such a formula.

South Coles Levee

(Continued from page 73)

The stripper column operates at 85 psi. From the bottom of this column is drawn a lean oil with a relatively low vapor pressure. The overhead product is raw natural gasoline. To meet the two above requirements, all the internal reflux that reaches the first tray above the feed is drawn from the stripper. The stripper is 66 in. diameter by 52 ft. high, and has 20 trays. There are 8 trays on 18-in. centers in the rectifying section and 12 trays on 24-in. centers in the stripping section.

The side-draw stream from the stripper is charged to the fractionator. This feed consists principally of light absorption oil with some heavy gasoline and kerosene. In this column, three cuts are taken: stripped absorption oil out the bottom, kerosene from a side draw, and natural gasoline overhead. The fractionator operates at 5 psi. It is 36 in. diameter by 63 ft. high, and has 24 trays 18-in. centers. There are 13 trays in the rectifying section and 11 trays in the stripping section. Four of the trays in the stripping section are below the internal heater. The kerosene side-draw connections are on the 7th, 9th, 11th, and 13th trays from the top. This type of fractionator operation has been successful in eliminating the light ends and controlling the vapor pressure of the lean oil.

The total absorption oil circulation rate is approximately 500 gal. per minute. The make up oil to the system is 80 gal. per day. The heavy ends picked up in the absorbers is 600 gal. per day.

An oil reclaimer is used to control the end point of the absorption oil. This vessel is located beside the stripper. The feed to the reclaimer is from 3 to 5 gal. per minute, and taken from the 13th tray from the top of the stripper. The rate of feed is controlled by a liquid level controller on the reclaimer. All the process steam used in the stripper first passes through the reclaimer. The partial pressure effect of the steam vaporizes the light ends and carries them back to the stripper. The heavy ends of the absorption oil accumulate in the reclaimer and are dumped periodically. This system has proved satisfactory for end point control.

Fractionation System

The raw condensate from the high pressure production gas is pumped from the 60 psi. trap into the crude debutanizer column through feed to bottoms exchangers. Here the temperature of the feed is increased from 97° to 250° F. From the base of this column, the debutanized condensate is drawn through the reboiler, heat exchanger, cooler, and thence to storage. The overhead vapors from this vessel are condensed and pumped into the recompressor interstage discharge line ahead of the cooler. Here they are blended with the condensable overhead product from the stripper. These two liquid streams along with the non-condensables, then flow to the depropanizer charge tank. The liquid is then pumped with a close clearance simplex pump to the depropanizer column through the feed to the bottoms exchangers. The charge rate to this column is controlled by a flow controller which regulates the steam to the charge pump. The depropanizer operates at 350 psi. From this vessel the propane and lighter fractions are taken overhead and the condensables are pumped to the injection wells.

Fixed gases are burned in the boilers and heater. For propane injection a 22 by 4½ by 20 simplex outside-packed plunger-type pump is used. It is operated on 300 lb. saturated steam and the discharge pressure is 3,750 psi. For recovery of propane, the depropanizer column is arranged with sidedraw connections on the 3rd, 5th and 8th trays from the top. The depropanized liquid flows from the base of this column through the re-

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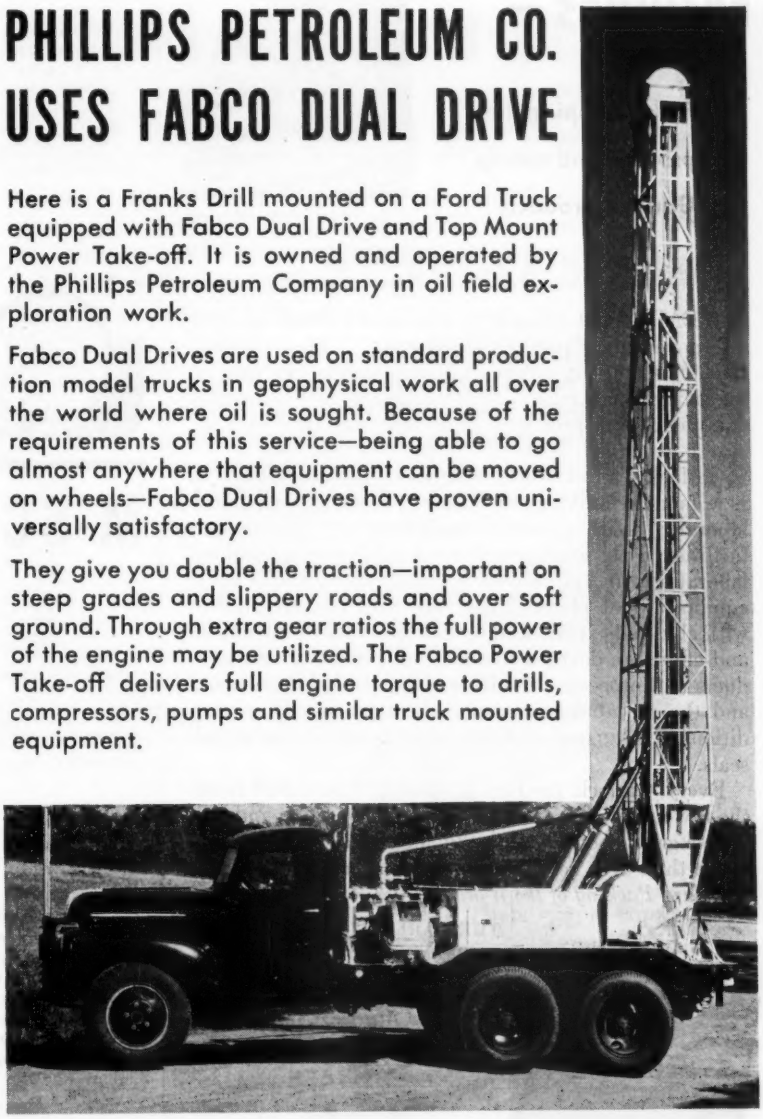

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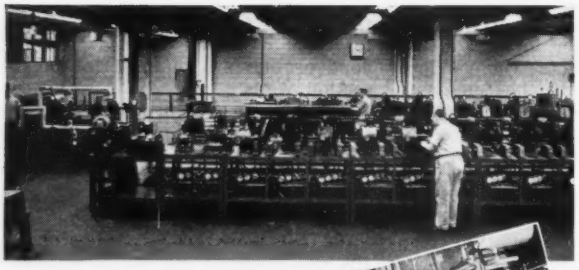

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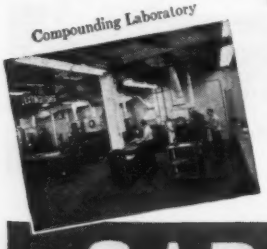

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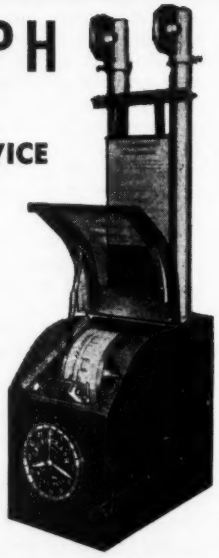

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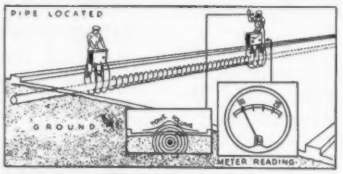

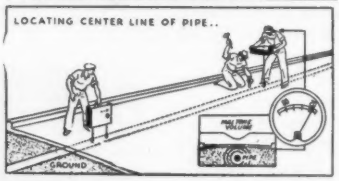

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boiler and bottoms to feed exchangers. From these exchangers the liquid passes through the debutanizer bottoms to feed exchangers to the debutanizer column. This column operates at 150 psi.

Natural gasoline is drawn from the base of the debutanizer through the reboiler, heat exchanger, cooler, and thence to storage. The butanes are taken overhead, condensed and charged to the butane splitter column. The butane splitter operates at 115 psi., is 66 in. diameter by 112 ft. high, and has 65 trays on 18-in. centers. The iso-butane is passed overhead, condensed, and the net make sub-cooled before going to storage. The normal butane is drawn from the base of the column through the reboiler, cooler, and then to storage.

Cooling Towers

Separate atmospheric cooling towers are installed, one for jacket water cooling and one for process cooling. The jacket water cooling tower is 53 ft. high and 132 ft. long. This tower is designed to cool 5,100 gal. per minute of water from 103° to 88° F. when the wind velocity is 1 mile per hour and the wet bulb 75° F. The jacket water cooling tower is used to cool the engine jacket water and the engine lubricating-oil cooler water. The heat load on this tower is 38,000,000 B.t.u. per hour.

The process cooling tower is 55 ft. high and 534 ft. long and is designed to cool 9,000 gal. per minute of water from 96° to 80° F. when the wind velocity is 1 mile per hour and the wet bulb 75° F. All the gas cooling coils, overhead vapor condensers, and liquid coolers handling hydrocarbon products are installed in this tower. The heat load is 70,000,000 B.t.u. per hour.

Compressors

In the compressor building there are nine 600-hp. two-cycle, gas engine driven compressors. Each machine has four compressor cylinders and serves two or more services. The compressor cylinders are so arranged that there are one 1,500 psi. cylinder and one or more 4,000 psi. cylinders on each machine. The remaining throws are fitted with low pressure cylinders. This arrangement was necessary to keep the two high pressure services in balance from a capacity standpoint.

Most unusual part of the compressor plant, from a design standpoint, is the suction and discharge piping. There are no expansion loops in the piping. Concrete piers are spaced from 6 to 8 ft. apart and the pipe is securely fastened to each pier with special type clamps. The direction of the pipe movement determines the type of clamp used. There are three types of clamps installed, (1) the anchor type, which is used to fasten the pipe rigidly to the anchor pier and does not allow movement in any direction; (2) the linear expansion type, which allows the pipe to move longitudinally only, and is identical with the anchor type except that the tie-down bolts on one side are spring loaded; and (3) the box type, which is a rectangular clamp with the anchor bolts spring loaded on one side to allow both longitudinal and lateral movement of the pipe.

Pipe vibrations in the 4,000 and 1,500 psi. discharge lines have never been apparent. This was accomplished by the incorporation of five separate ideas in the design of the compressor piping:

1. The elimination of expansion loops by using special pipe clamps.
2. Short pier spacing to keep all heavy valves and blind flanges close to the supports.
3. Large suction and discharge lines which result in low gas velocities of from 5 to 6 ft. per second in the high pressure discharge lines.
4. Large suction and discharge chambers located close to the compression cylinders. The following chamber volumes were used (all volumes are stated as cylinder volumes): 1,500 psi. suction, 19 volumes; 4,000 psi. discharge, 19 volumes; 450 psi. suction, 12 volumes and the 1,500 psi. discharge, 12 volumes.
5. The installation of a patented

AMERICANS have been handling weighty matters in heavy industrial machinery and oil country equipment for more than a quarter of a century. Leading manufacturers prefer AMERICANS because they are designed especially for smooth, dependable service in the heaviest, most powerful equipment built. Their simple construction, absolute precision and tremendous strength assure longer, safer, lower cost, trouble-free performance under the most abusive operating conditions to be found in modern industry.

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PITTSBURGH, PENNSYLVANIA
Pacific Coast Office: 1718 S. Flower St., Los Angeles, California

AMERICAN *Heavy-Duty* **ROLLER BEARINGS**

type pulsation dampener on all cylinders discharging at 1,500 and 4,000 psi. One pulsation dampener takes care of from one to three cylinders depending upon how the cylinders are manifolded.

It is quite apparent that at high suction and discharge pressures supercompressibility must be considered when calculating the volumetric efficiencies of the compressor cylinders. This is illustrated by the following data based on calculations and actual observations.

COMPARISON OF CALCULATED AND ACTUAL CYLINDER CAPACITIES AT 1,500 PSI. SUCTION AND 3,750 PSI. DISCHARGE

		Calculated quantities		
	Metered quantity at suction conditions‡	Supercompressibility considered†	Supercompressibility considered only at suction conditions	Conventional method§
Thousand cubic feet per day	39,450	*40,760	36,000	29,435
Per cent of metered quantity	100.0	103.5	91.2	74.3

*Calculations made by using the method developed by Robert S. Ridgway, Standard Oil Co. of California, presented before the California Natural Gasoline Association in Los Angeles, March 1, 1945. †(1) To calculate cylinder volumetric efficiency. (2) To make allowance at suction conditions. ‡Supercompressibility considered in calculating orifice coefficient. §No supercompressibility considered.

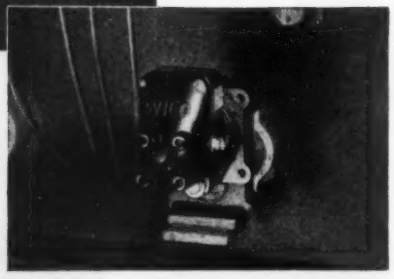
Test Separator Area

All the lines from the production wells enter the plant at one point near the southeast corner. Here the gas from each well flows through its orifice meter, steam jacketed heater, flow bean, check valve and into the production header. The well effluent is metered at full well head pressure. The test separator header is manifolded to all the production lines. After entering the test separator header, the gas and liquid flow through cooling coils and to the 1,500 psi. test separator where the gas passes overhead through an orifice meter and enters the 1,500 psi. wet gas stream going to the high pressure absorber. The retrograde liquid or raw condensate is drawn from the base of this separator through a liquid level control valve. This liquid is then flashed in the 450 psi. test separator.

The flash gas passes overhead through an orifice meter and continues to the 450 psi. reabsorber. The liquid is again drawn through a liquid level control valve and flashed in the 60 psi. test separator. From this vessel the 60 psi. flash gas passes through an orifice meter and continues on with the 60 psi. black oil gas to the plant. The 60 psi. trap is a horizontal vessel, 7 ft. diameter by 30 ft. long, with sufficient capacity to hold the raw condensate make from any well for a period of from 12 to 24 hours.

To check a gas-oil ratio the full production gas stream from a well is diverted through the test separator unit. The outlet temperature of the gas from the cooling coils is held constant for all tests. Volumes are recorded and gravities on the three gas streams are taken. The liquid is accumulated and measured in the 60 psi. trap. From these figures a gas-oil ratio and per cent water cut is determined. Low temperature fractional distillations are run on a liquid and gas sample from each production well. To eliminate running a separate analysis on each of the three gas streams, a composite gas sample is taken. This composite sample is taken in absolute pressure increments proportional to the volume of each stream. By holding the final absolute pressure in the sample bomb below 300 lb. the effect of supercompressibility is small. A sample of 60 psi. liquid is taken and analyzed. The results of the two analyses are combined to determine the composition of the well effluent.

The contractor in charge of the construction of the South Coles Levee cycling plant was Fluor Corp., Ltd., of Los Angeles, Calif.



...AND OUR OWN HUMID JUNGLE, TO GIVE YOU DEPENDABLE IGNITION

Day after day, extra fine, highly abrasive dust, imported from Arizona, sweeps around an operating WICO magneto . . . 1500 hours . . . 2000 hours . . . and still the "mag" runs on. In a nearby humidity box where the temperature is 90°-120° and the humidity 95%, another WICO magneto gathers drops of warm moisture . . . collecting water drips over it from above, hour after hour.

These are only two of many tests started back in 1942 . . . tests that assure us and guarantee you the finest line of magnetos engineering skill can produce.

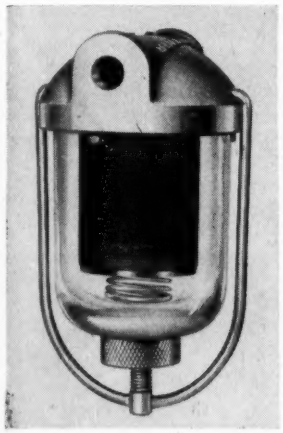
This new line of magnetos, identified by the letter "X" will soon be introduced on these pages. Simpler in design, sturdier in construction, with less parts to get out of order, they will replace several of the older WICO models you know so well. Wico Electric Company, West Springfield, Mass.

WICO
THE HEART OF YOUR ENGINE

OIL AND GAS EQUIPMENT Digest

IT'S NEW ✓ CHECK IT

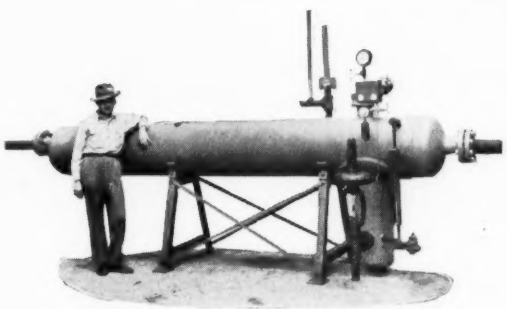
by L. L. Jones Jr.



(1) NEW GASOLINE PURIFIER recently released for civilian use is said to improve performance of cars, trucks, buses, tractors, stationary engines, and fuel-oil burners. Unit purifies gasoline or other fuel by passing it between layers of helically wound ribbons made of impervious material. Dirt and other impurities are stopped at the outer edges of these ribbons and fall into sediment chamber. Deposits clinging to exterior can be blown off with compressed air. Purifier separates free water from gasoline. *Skinner Purifiers, Inc.*

IT'S NEW ✓ CHECK IT

(2) NEW HORIZONTAL FOAM SEPARATOR introduced to the oil industry to handle foaming crude oil. Separating principle involved causes release of gas before foaming occurs. Principle should also lend itself to flash separation of distillate in stage separation. Separator is available in 500, 1,000, and 1,500 lb. W.P. sizes. Method gives greatly increased capacity with complete separation. *Peerless Manufacturing Co.*



IT'S NEW ✓ CHECK IT

(3) SAFETY AIRGUN ELIMINATES GOGGLES through use of an ingenious airguard located above the nozzle of the gun. This airguard provides a safety umbrella of air. Particles ejected by the gun action are arrested by invisible ring of air and flung downward. *Algonquin Parts, Inc.*

IT'S NEW ✓ CHECK IT

(4) NEW PARTS CLEANER SPEEDS FLEET MAINTENANCE. A new decarbonizer and degreasing material simplifies fleet-maintenance problems and reduces lay-up time. Extremely effective for the removal of grease, dyes, gums, and carbon. Carbon deposits normally difficult to remove even by such methods as scraping or wire brushing are so softened that they can be wiped off with a cloth. Sealed to cut down on evaporation and drag-out. It is safe on all metals. Odorless and has no flash point—will not burn or explode. The qualities of this parts cleaner make it excellent for cleaning pistons, carburetors, fuel pumps, and various small parts. *Kelite Products, Inc.*

IT'S NEW ✓ CHECK IT

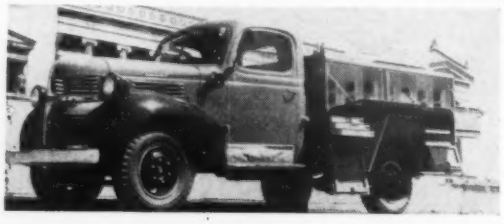
The Oil and Gas Equipment Digest presents a review of what is new in equipment and trade literature . . . makes it possible for readers to obtain full information on every subject by use of convenient "Check It—Mail It" service card. This periodic feature of The Oil and Gas Journal will include all that is new in equipment . . . at a time when new products are being introduced, and existing products improved.

Keep Informed. Save Time. Tear Out Card. Check It. Mail It.

OIL AND GAS EQUIPMENT Digest

IT'S NEW ✓ CHECK IT

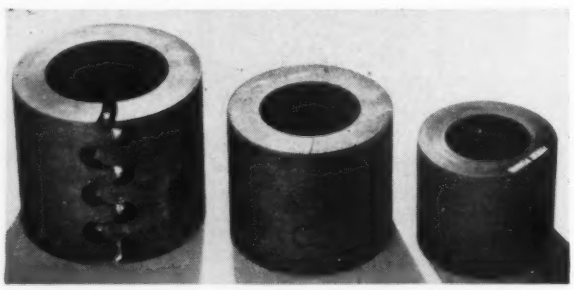
(5) NEW STANDARD UTILITY BODY presented for installation on ¾-ton or 1-ton trucks. The unit is known as the American Gas Meter Installation Body. Unit is of all-metal construction and is used for routine meter changing, general maintenance, and repair work. Side



boxes and sliding trays can be equipped with meter compartments accommodating 31 gas meters. Unit is designed mainly for safeguarding meters from damage. *American Coach & Body Co.*

IT'S NEW ✓ CHECK IT

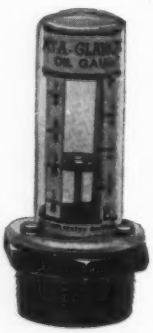
(6) NEW TYPE GLAND PACKING offers to oil and refining industry a new interlocking feature in gland packing which facilitates installation or removal of



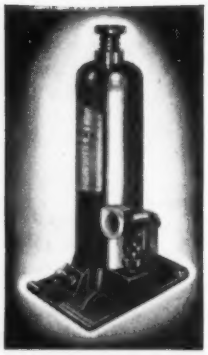
packing without removal of the piston rod. Quick installation and ease of application also eliminate the possibility of damage to the rods. Resists oil, heat, and wear and is coated with graphite to reduce friction troubles. *Supreme Oil Tool, Inc.*

IT'S NEW ✓ CHECK IT

(7) PERFECT VISIBILITY OIL GAGE is announced for oil tanks for either 1½ in. or 2 in. openings. It is designed for all sizes of smaller tanks and can be read from any direction. Gage incorporates the use of eight new patented features and is unique in the fact that it does not use gears, cams, springs, or magnets. *Krueger Sentry Gauge Co.*



IT'S NEW ✓ CHECK IT



(8) NEW DROP FORGED STEEL hand hydraulic jack is now on the market for the oil industry. Base is made entirely of forged steel. Trouble from porous castings and breakage is eliminated. Hydraulic system is leakproof with a maximum of durability and a minimum of maintenance. Jacks are available in sizes up to 30-ton capacity. *Joyce-Cridland Co.*

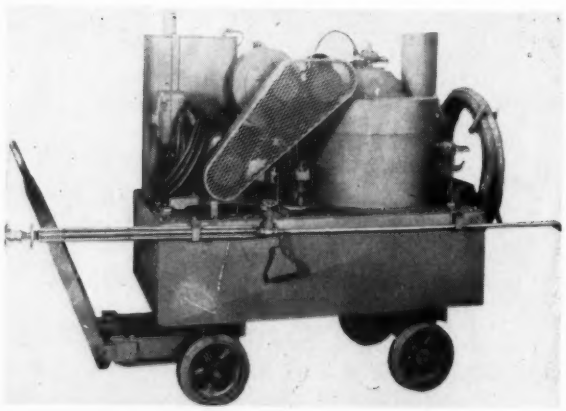
IT'S NEW ✓ CHECK IT

(9) PRESSURE RELIEF VALVE which maintains a predetermined pressure by relieving any excessive pressures that may take place in fuel or hydraulic lines. Valve can easily be set to desired pressure without interrupting its operation, by means of an adjusting screw. Available for pressures ranging from 5 to 100 psi. Inlet and outlet are in straight line. *Aerotec Co.*

IT'S NEW ✓ CHECK IT

(10) CHRONOMETRIC TACHOMETER that is small enough to be carried in pocket, but yet highly accurate. Measures shaft speeds from 1 to 10,000 r.p.m., or belt speeds from 1 to 3,000 fpm., in 3-second intervals without gear ratio changes. Higher speed ranges are obtainable on special requests. Comes in polished aluminum case and weighs only 9 oz. Operating buttons provided for starting and resetting. *Milwaukee Lock & Mfg. Co.*

IT'S NEW ✓ CHECK IT



(11) VAPOR CLEANING UNIT gives faster, better cleaning at lower cost. This unit is a self-contained, down draft flame, oil fired, enclosed coil-type steam generator that delivers hot vaporized cleaning solutions under selective pressures up to 200 psi. Facilitates speedy removal of grease, grit, grime, paint, and other foreign deposits from surfaces. A wide range of fuel oils may be used to operate unit. Due to its flexibility of steam pressures,

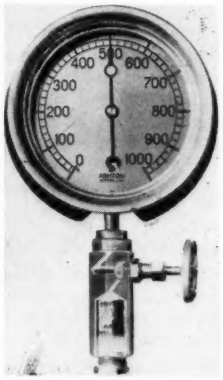
the unit may be employed on many different types of light and heavy duty cleaning. *Oakite Products, Inc.*

IT'S NEW CHECK IT

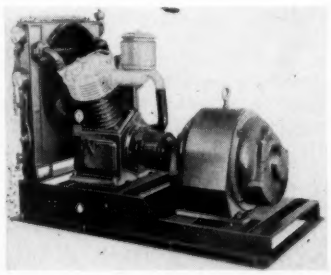
(12) UNIBOLT BOILER FEED CROSS is fitted with blanking plugs. Designed for use on feed water lines between the check valve and boiler feed water inlet connection. Blanking plugs are easily removed by releasing a single bolt to permit inspection of the line and to simplify removal of solids precipitated from feed water. *Thornhill-Craver Co.*

IT'S NEW CHECK IT

(13) IMPROVED PULSATION DAMPENER for gages and governors is the new Micro-Bean. Now available in all-brass and all-steel with stainless steel stems. Temperature has no effect on the viscosity and surface tension of liquids within the line. Also overcomes the scoring problem. This is effected by a set screw, which when turned slightly will bring the seating back to perfect control. *J. A. Campbell Co.*



IT'S NEW CHECK IT



(14) INDUSTRIAL DEPARTMENTAL COMPRESSOR units available in 60, 105, 160, 210, and 315 cfm. sizes, are designed for application in individual plant departments. Departmental system is a progressive departure from the conventional "central system" where a large compressor pipes air to various departments. *Davey Compressor Co.*

IT'S NEW CHECK IT

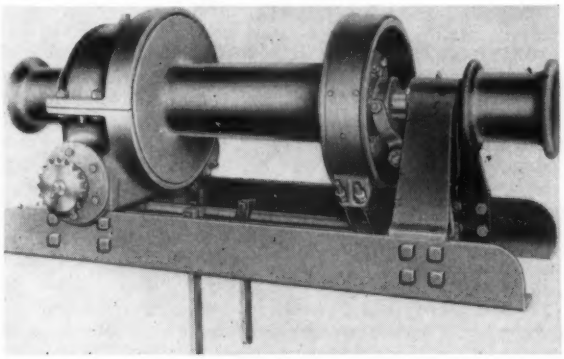
(15) REFLEX WATER GAGE constructed for safety of heavy reinforced parts made of finest brass. Designed especially for the oil country boiler, this gage makes it possible to take a simple, clear and accurate reading of the boiler water level at any height. Easily read in contrasting colors. Water appears black, empty space appears silver. *James P. Marsh Corp.*

IT'S NEW CHECK IT

OIL AND GAS EQUIPMENT Digest

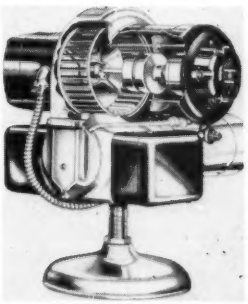
IT'S NEW CHECK IT

(16) TRUCK AND TRACTOR WINCHES are now being manufactured as a new line by an old established firm of oil field equipment manufacturers. Truck winches are to be produced in 2 sizes: these are rated at 15,000-lb.



line pull rating and 30,000-lb. line pull rating. There will also be 2 sizes of tractor winches: these will be rated at 60,000-lb. line pull rating and an extra heavy duty winch capable of pulling 125,000 lb. *Lufkin Foundry & Machine Co.*

IT'S NEW CHECK IT



(17) NEW OIL BURNER DEVELOPMENT embodies new economy clutch in mechanical functioning. Simple, rugged, and positive, the clutch starts a flow of air before the flame is ignited, and permits the air flow to continue for several seconds after the flame has ceased. The result is a greater degree of cleanliness in the interior, and a smaller amount of heat-wasting soot. *Gilbert and Barker Mfg. Co.*

IT'S NEW CHECK IT

(18) NEW TYPE ROPE SOCKET for faster well servicing makes it possible to change from swab to bailer without cutting the wire line. Construction and assembly of the socket eliminate lengthy change-over delays. Socket has only 4 parts: top, bottom, mandrel, and key. Change can be made by using 1 top and 2 bottoms. Bottom part is attached to part to be placed on line. It is then screwed into top which has been attached to part being removed from line. *International Derrick & Equipment Co.*

IT'S NEW CHECK IT

TRADE LITERATURE

(19) SURFACE-CONTROLLED INTERMITTING SYSTEM. Eight-page booklet covers control, adjustability, low installation cost, adaptability, and economy of operation. Simplicity of system also explained. Booklet is well illustrated and contains installation designs. *Merla Tool Corp.*

IT'S NEW ✓ CHECK IT

(20) PERCO CYCLOVERSION PROCESS is a new pamphlet covering the process for catalytic cracking and catalytic reforming developed by the Perco division of Phillips Petroleum Co. Cycloversion readily lends itself to both large and small refinery operations and offers many advantages to refiners in the production of premium motor-fuel products at minimum cost. *Phillips Petroleum Co.*

IT'S NEW ✓ CHECK IT

(21) RIG LIGHTING PLANTS is the title of a colorful four-page brochure published to cover light plants ranging from 5 to 25 kw. Descriptions of five diesel models and five gas, gasoline, or butane models are included. Folder discloses fact that each unit is guaranteed to be capable of operating at overloads up to 30 per cent in excess of its rated capacity at intermittent periods. *Stewart & Stevenson Services.*

IT'S NEW ✓ CHECK IT

(22) TYPE "W" TUBING HEAD described in new bulletin. Bulletin shows detailed cutaway drawings of typical applications of the tubing head. Head is available for working pressures of 1,000 through 3,000 psi. Also carries two photographs and technical data on the tubing-head bodies and adapter flanges. *The National Supply Co.*

IT'S NEW ✓ CHECK IT

(23) APPLICATIONS AND ECONOMICS OF THE DIESEL ENGINE is a 16-page descriptive handbook. Written by the executive director of the Diesel Engine Manufacturers Association, this booklet contains much valuable information on the various types of applications that call for constant power. Also covers the diesel engine's operating efficiency and economy. *Diesel Engine Manufacturers Association.*

IT'S NEW ✓ CHECK IT

(24) AN EMULSION TREATER that is self-insulating and also a treater, heater, separator, and settling tank all in one is publicized in a recently released catalog by the manufacturer. In the words of the company the treater is "designed to handle 90 per cent of all emulsion treating problems with greater efficiency, economy, and dependability." *The Parkersburg Rig & Reel Co.*

IT'S NEW ✓ CHECK IT

(25) DOZER-SHOVEL. New 24-page bulletin, colorfully illustrated with numerous photographs and pen drawings, depicts actual operating conditions of a wide variety of digging, earth-moving, and material-handling jobs. Of particular interest to tractor equipment users is the illustrated feature showing the easy interchangeability from shovel to bulldozer and vice versa. *Bucyrus-Erie Co.*

IT'S NEW ✓ CHECK IT

(26) PERFORATED STEEL SHEETS. Bulletin available illustrating 20 different, original, and exclusive designs of perforated sheet steel, clean die cut; ungerer roller leveled. Can be cut, bent to form angles. Useful for ventilating panels; guards for machinery; partitions for rooms, drains, screens, and other uses. *Marsh Steel Corp.*

IT'S NEW ✓ CHECK IT

(27) ELECTRICAL EQUIPMENT for every phase of the petroleum industry is described in a new 36-page booklet, which includes photographs showing installation and application of a.c. and d.c. semielectric and full-electric machines. Also samples of pipe-line and marine equipment. *Westinghouse Electric Corp.*

IT'S NEW ✓ CHECK IT

(28) THORNTON AUTOMATIC LOCKING DIFFERENTIAL is covered in detail. Contained in the 34-page booklet is a complete resume covering operation, maintenance, service, and parts list. Assembly and servicing are included together with application of the differential. *Thornton Tandem Co.*

IT'S NEW ✓ CHECK IT

(29) VALVE WORLD is the title of a periodical available to the oil industry. Published every other month by Crane Co. this house organ is an interesting and very well edited magazine devoted to publicizing new developments in the manufacturing of valves. *The Crane Co.*

IT'S NEW ✓ CHECK IT

(30) ELECTRONICS FOR THE BUSINESSMAN. To show how electronics is already speeding production, saving time and materials, and promoting safety in industrial plants, "The Business Man's Guide to Electronics" has been published. A colorful 28-page booklet, the manual describes to the layman all applications and fundamental functions of electronics in industry. *Westinghouse Lamp Division.*

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NATURAL GAS

Kansas Commission Hears Testimony in Republic Case

A hearing by the Kansas Corporation Commission on charges that Republic Natural Gas Co. failed to measure properly the gas produced from some of its wells in Hugoton field was held in Liberal, Kans., last week.

Steve Ford, Jr., former Republic measurement superintendent, was called to testify on what the notice of hearing termed "the practice of failing to measure gas produced by a well into a pipe line, and estimating such production."

R. J. Phillippe, commission-employed conservation officer, testified he had told Ford that he was violating the commission rulings in his (Ford's) methods of calculating the flow of gas from wells designated as Nos. 1 and 2, south of Hugoton. Ford said that after Phillippe's report to the commission on these two wells, he had taken it upon himself to remedy the situation.

Ford explained to the commission that in estimating the flow of unmeasured gas, he had based his calculations on a number of factors, but did not apply all factors in determining the flow from each well. He said that it finally occurred to him that he was not following the commission rule that all gas should be measured with meters of "an approved type."

Attorney for Republic presented figures to show that the companies paid royalties on a production basis in excess of the amount actually sold. Republic owns its own gathering lines and sells gas to the Northern Natural Gas Co.

The commission adjourned its hearing after requesting figures on 88 Republic gas wells be submitted to the commission on or before September 1.

August 6 Hearing Set on Three Major Gas Projects

WASHINGTON. — Applications of Michigan-Wisconsin Pipe Line Co., Panhandle Eastern Pipe Line Co., and Michigan Gas Storage Co. for expansion programs totaling more than $100,000,000 were consolidated for hearing August 6, the Federal Power Commission announced this week.

Michigan-Wisconsin's application requested permission to construct a natural-gas transmission pipe line approximately 1,076 miles in length, with some 892 miles of branch lines, extending from the Hugoton gas field in Texas to markets in Missouri, Iowa, Illinois, Wisconsin, Indiana and Michigan. Initial cost is estimated at $56,-808,076, with additional construction during the first 4 years bringing the total estimated cost to $84,059,547.

Panhandle Eastern's request includes authorization for a number of major additions to its Texas to Michigan natural-gas pipe line system. These facilities are proposed for construction in 1947 at a total estimated cost of $23,644,000.

Michigan Gas Storage, with headquarters at Jackson, Mich., is a newly organized company for the purpose of purchasing and receiving natural gas from Panhandle Eastern during the summer months for storage in the Winterfield and Cranberry Lake gas fields in Michigan and subsequent withdrawal and sale during winter months. The company proposes to purchase transmission and compressor facilities in Michigan and to construct some 150 miles of 24-in. line extending from a point of connection with Panhandle Eastern's system at Freedom Junction, Mich., to the Winterfield and Cranberry Lake fields; drilling and connecting about 235 additional wells; additional field lines and appurtenant equipment, including compressor capacity of 6,400 hp. Total cost of both purchased and constructed facilities is estimated at $20,-607,549.

Natural Gasoline

Kibre Named President Of California Association

LOS ANGELES.—M. W. Kibre, assistant manager, gas department, General Petroleum Corp., has been selected president of the California Natural Gasoline Association for the 1946-47 term, succeeding M. L. Arnold, Richfield Oil Corp.

F. J. Colton, Tide Water Associated Oil Co., was named vice president, and George L. Taylor was reappointed secretary-treasurer for his tenth year in that capacity.

New directors are Coles B. Bason, Ingersoll-Rand Co.; H. L. Eggleston, General Petroleum Corp.; C. L. Hutchings, Tide Water Associated Oil Co.; R. C. Patterson, Belridge Oil Co., and George F. Howells, Tide Water Associated Oil Co., who is chairman of the association's Taft chapter.

The group shown here comprises the standing committee chairmen, including some of the new officers, of the California Natural Gasoline Association. Top row: D. B. Johns, vice chairman, technical committee; P. W. Mettling, chairman, entertainment committee; M. W. Kibre, president and chairman, executive committee; L. Harmon Peahl, secretary, Taft Chapter; and F. J. Colton, vice president and chairman of the advisory committee. Lower row: R. S. Tulin, chairman, gas report committee; C. D. Gard, chairman, finance and budget committee; L. E. Woodruff, chairman, program committee; J. B. Taylor, chairman, by-laws revisions committee; E. G. Ragatz, chairman, fall meeting committee; E. P. Valby, chairman, technical committee; and M. L. Arnold, chairman, publicity committee

PENBERTHY
"TRANSPARENT"
DROP FORGED STEEL
LIQUID LEVEL GAGES

Used to observe color and density of liquids under high pressures and/or temperatures. Construction exceptionally sturdy. Made of alloy temperature resisting steel, and are highest quality throughout. Liquid chamber made from solid block of steel to assure perfect alignment and rigidity. Conform with A.P.I.—A.S.M.E. requirements.

The "Transparent" is one of the complete line of Penberthy gages that meet every liquid level gage requirement.

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ECOLITE
92BM
WITH LOCKING DEVICE AND SEALS

TWICE APPROVED for DOUBLE SAFETY
APPROVED BY
U. S. BUREAU OF MINES
UNDERWRITERS' LABORATORIES

—for use in atmospheres containing Methane or natural gas, gasoline or petroleum vapors. This double-safety lantern has a tamper-proof reflector and cover with locking device and seals. Throws 1500 ft. beam. Instantly ejects broken bulbs from battery circuit. Large handle—360° pivoting feature gives direct illumination where needed and leaves both hands free for work.

Now at Supply Stores
ECONOMY ELECTRIC LANTERN CO.
3100 W. CHERRY ST. MILWAUKEE 8, WIS.

REFINING

August Lead Allocations To Remain Unchanged

WASHINGTON. — No change will be made in allocations of metallic lead for manufacture of tetraethyl fluid nor in tetraethyl fluid to refineries for August, Lawrence Brown, head of the chemical division of the Civilian Production Administration, announced last week. July allocation was 4,000 tons.

Brown pointed out that the present ceiling price of 9.5 cents in New York and 9.25 cents in the Middle West had not yet affected the amount of lead available. Only when the price rises high enough to cause some users to drop out of the market will more lead be available for tetraethyl fluid.

Although there had been consideration of changing the allocation of tetraethyl from a monthly to a quarterly basis, one CPA official pointed out that such a change would complicate allocations to such an extent that they could not be controlled. As a substitute, permission was given to refiners to borrow from one month to another or to carry over unused portions of allocations.

Rubber Supplies Adequate, Goodrich President Says

AKRON, Ohio.—The nation's supplies of rubber—synthetic and natural—now appear adequate to maintain the rubber industry at its all-time record production rate for the full year 1946, John L. Collyer, president of B. F. Goodrich Co., said last week. Rubber manufacturing operations mounted 40 per cent higher during the first 6 months than in any prewar year, and doubt had been expressed that there would be sufficient rubber to continue at that level throughout the balance of the year.

"The output of rubber products of all kinds in the United States for the first 6 months of 1946 was above the highest rate in history," Collyer said. "It is now estimated that consumption of synthetic and natural rubber in this country this year will approach 1,000,000 tons, over 70 per cent of which will be synthetics." The nation used 651,000 tons of rubber in 1940—of which only 2,500 tons was synthetic—a prewar consumption record.

"Continued progress has been made in improving the quality of synthetic rubber and of the products made from it and in reducing the cost of manufacture," the rubber company official stated.

"During the first half of 1945, the average cost of synthetic rubber of the type in greatest use was approximately 30 cents a pound. Since that time it has been possible to eliminate some high-cost production which, with other efficiencies, has reduced the average total cost of the main-type synthetic rubber to less than its selling price of 18½ cents a pound established by the Government.

"Until July 1, natural rubber from the liberated areas was costing the Government 20¼ cents a pound f.o.b. Far East. The resale price to the rubber industry of 22½ cents a pound enabled our Government to recover its handling costs. For the last half of 1946, the Government will pay 23½ cents a pound f.o.b. Far East for new supplies from this source.

"However, even after including natural rubber at the new higher prices of 23½ cents f.o.b. Far East, but excluding some purchases at much higher prices under contracts made during the war, the present cost to the Government of natural and synthetic rubbers combined is below the current selling prices to the rubber industry.

"It will be some time in 1947 before we have enough natural rubber to test fully its relative worth with synthetic rubber. The hope for natural rubber lies in its ability to remain competitve with synthetic rubbers produced by American industry," Collyer declared.

Lion Oil Construction Projects Move Ahead

EL DORADO, Ark.—The two principal construction projects of Lion Oil Co. are proceeding favorably, T. H. Barton, president, announced last week.

Engineering and drawing work for the thermofor catalytic cracking unit of 4,500-bbl. daily capacity, is nearing completion, and about half of the necessary purchasing has been contracted. Actual construction of the Houdry-licensed unit, under contract to Lummus Co., will begin soon.

Foundations have already been poured for the second project, construction on the chemical division plant site of facilities for producing finished ammonium nitrate fertilizer. Until completion of these facilities,

finished fertilizer will be manufactured in equipment leased by Lion at Minden, La., and Texarkana, Tex.

Equipment Priority Available For Alcohol Producers

WASHINGTON.—Producers of certain types of synthetic alcohol such as industrial ethyl and normal butyl will now be granted priority assistance in obtaining capital equipment, the Civilian Production Administration said last week.

This step was taken in order to increase manufacturing facilities for the synthetic production of industrial ethyl alcohol, normal butyl alcohol, and methanol from nonfood raw material. The move is necessary, CPA said, because of inability to obtain molasses in the usual quantities from the Caribbean area. CPA said that although the industry is operating up to capacity in the manufacturing of synthetic alcohol, supply is still far behind demand.

Stocks Up; Refinery Runs High in Gulf Coast Group

HOUSTON.—Member refineries of the Gulf Coast Refiners Association reported crude runs to stills averaged 143,824 bbl. daily during the first half of July, or 91 per cent of the rated 158,000 bbl. a day operating capacity.

With the exception of aviation gasoline, stocks of all petroleum products built up during this period. Aviation gasoline stocks as of July 15 were 291,633 bbl., indicating a decrease of 46,203 bbl. during the first half of the month.

Stocks of all grades of gasoline and naphthas increased the first half of July by 52,311 bbl., being reported at 2,219,982 bbl. A year ago total gasoline stocks were 1,747,762 bbl.—27 per cent under the July 15 figure. Automotive gasoline stocks alone were 150,473 bbl.—an increase of 80,930 bbl.

Kerosene stocks at 355,965 bbl. on July 15 indicate an increase of 49,971 bbl. during the period. Diesel oil increased 15,465 bbl., to 172,466 bbl., and other gas oils increased 50,812 bbl. to 1,055,874 bbl. No. 5 fuel oil was up 273,294 bbl., to 465,561 bbl., and bunker C fuel oil increased 73,223 bbl., to 363,088 bbl., July 15.

Total stocks of all products in the plants of this group were reported at 4,632,936 bbl. on July 15, an increase of 514,976 bbl. over the previous 2 weeks and 25.8 per cent over the year-ago total of 3,681,506 bbl.

Reports on Water-Treating Studies Made Available

CHICAGO. — National Aluminate Corp. announces that reprints of two articles on water-conditioning written by R. T. Hanlon and his associates are available for free distribution to interested persons and organizations and may be obtained from that company at 6216 West Sixty-sixth Place, Chicago 38. The articles are entitled "Scale and Corrosion Prevention by Chemical Conditioning of Water" and "Scale and Corrosion Control of Potable Water Supplies at Army Posts."

The second paper discusses results of study and experiments at 30 Army posts, undertaken at the direction of the Army Engineer Corps, in the work of conditioning water supplies properly. The first paper shows how the results and methods employed in the Army work can be applied successfully to industrial and municipal water problems.

Aruba Refinery Drilling To Find Seepage Oil

ARUBA, Netherlands West Indies. —Lago Oil & Transport Co. has begun a search for oil 65 ft. below the site of its refinery and tank farm area.

The company is seeking oil that has seeped into the coral through leakage from sewers, pipe lines, packings and other sources. Accumulations of both oil and gas were found to exist from such leaks. The company estimates the loss to be as high as 50 bbl. an hour.

Wagon drills bore the "wells." One purpose is the elimination of the potential hazard formed by the pockets. The survey also is expected to help eliminate major sewer leaks that may exist or develop in the future.

Excess drips from pump stuffing boxes, valves, and connections are blamed for the greater share of the loss. A total of 2,000 samples daily are taken from tanks, and in drawing the samples, lines are flushed with oil, most of which is lost to the sewer.

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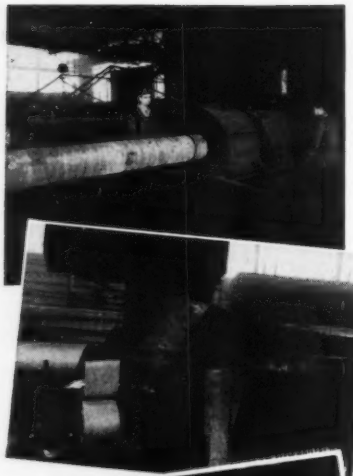

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PIPE LINES

Big-Inch Bids to Be Revealed This Week

WASHINGTON. — War Assets Administration is scheduled to make public this week the offers received from private interests for war-built big-inch and little big-inch pipe lines.

Oil, pipe-line, and natural-gas industry executives, as well as coal and railroad groups who stand to be adversely affected by peacetime operation of the carriers, are closely following the Government's efforts to dispose of the property.

WAA disclosed seven proposals to buy and three to lease already have been received along with 12 inquiries indicating bids may be filed, and five letters signifying possible lease offers.

Four of the five purchasers, WAA said, plan to use the lines for oil transportation, two for gas, and one wants to move one of the lines elsewhere for oil shipment.

After bids are opened, copies will be distributed to members of WAA's real property disposal board. The offers will be studied by the legal section, evaluated, and then placed before the board for action. The Department of Justice will pass on any contract for the lines, and since more than $5,000,000 is involved, the transaction will be presented to Congress for approval. Disposal of the lines also will be followed by officials of the Army-Navy Petroleum Board who are said to oppose any disposal contract which will require lengthy time for reconversion of the lines to their original use in the event of another emergency.

Presumably WAA will favor offers proposing to use the two lines for oil shipment. Surplus Property Administration, WAA's predecessor, recommended this policy to Congress. Congress took no action on SPA's report within the required 30 days, but recent statements by individual congressmen have indicated any disposal contract is likely to be reviewed on Capitol Hill.

The plans to dispose of the lines for oil transportation have encountered considerable opposition within the oil industry. Late in February, B. L. Majewski, vice president of Deep Rock Oil Corp., in a letter to Sen. Joseph C. O'Mahoney, asserted SPA's report recommending sale of the lines as petroleum carriers "contains specious arguments, false figures, and illogical conclusions."

On the other hand, efforts to sell the lines for gas transmission are certain to draw fire in Congress. Some congressmen from coal-producing areas will fight to protect coal markets from further encroachment.

Two offers publicly made several months ago both contemplate use of the lines for gas. Trans-Continental Gas Pipe Line Co., Inc., a newly organized Texas Corp., filed application with the Federal Power Commission for authority to convert the lines to gas use.

Big Inch Gas, Inc., a new Delaware Corp., also asked an FPC permit to operate the big-inch for gas, stating it had offered $40,000,000 for this line in conjunction with an offer by Big Inch Oil, Inc., to buy the little big-inch line for petroleum transportation.

The Power Commission, now involved in its prolonged investigation of the natural-gas industry which has

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backfired in attacks on its own regulatory policies, has shown a desire to steer clear of any controversy over the Government pipe lines and withhold action on the applications until the lines themselves are disposed of.

In April, L. M. Glasco, Dallas, proposed relaying the little big-inch as an oil outlet to the West Coast. In a letter to WAA, Glasco said he represented a group of Texas independents and outlined plans to buy the line to relay to California to give smaller producers in West Texas an outlet for their crude.

Glasco last week complained that WAA regulations had eliminated him as a purchaser. He sent a letter to all members of Congress in which he said WAA's policy prevented relaying either of the lines.

Contractors to Be Shown California Right-of-Way

LOS ANGELES.—Contractors interested in bidding on construction of the 30-in. natural-gas pipe line from Blythe to Los Angeles, Calif., for Southern California Gas Co. and Southern Counties Gas Co. will be conducted over the right-of-way August 6. The tour will be under supervision of B. M. Laulhere, Los Angeles, who has the temporary title of construction engineer on the Blythe-Los Angeles line. He was manager of engineering services for Southern California Gas Co. until relieved of other duties and assigned to the pipe-line project.

Bids on the construction are expected to be filed around September 9 with award of contract scheduled to follow by the end of September, depending on time required to analyze the proposals.

First steel plates from U. S. Steel's Homestead mill were received in Los Angeles a few days ago by Consolidated Steel Corp., for first fabrication experiments.

Southern California and Southern Counties gas companies hope to start actual construction on the Blythe-Los Angeles leg of the line around first of 1947.

At Blythe, on the Colorado River, the California gas line will take delivery of up to 125,000,000 cu. ft. per day during the first year of the contract term with El Paso Natural Gas Co. The El Paso company will build 737 miles of 26-in. and 251 miles of 24-in. line to deliver gas at Blythe from West Texas, New Mexico and Texas Panhandle fields. The California gas companies may exercise option to increase maximum delivery to 305,000,000 cu. ft. daily on or before September 1, 1949. Gas deliveries to the Southern California and Southern Counties companies' Blythe station will increase to 175,000,000 cu. ft. per day after the first year of the contract. In hearings before the Federal Power Commission last April, the California gas concerns signified willingness to make immediate commitment for delivery of 305,000,000 cu. ft. per day. Certificates of convenience and necessity were issued, however, by FPC and the California Railroad Commission without disturbing delivery proposals in the original agreement with El Paso Natural Gas Co.

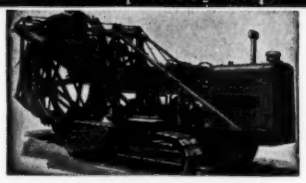
Sinclair's New Systems Due for August Completion

Construction work on the laying of two products lines of Sinclair Refining Co. from Toledo to Detroit and from Toledo to Columbus, Ohio, via Marion, is being rushed to completion, and it is expected both systems will be in operation in August.

The lines are each 6 in. and secure their gasoline supplies from the Sinclair 8-in. line extending from its East Chicago, Ind., refinery to Toledo. The Sinclair company which, for several years, has been a major distributor of petroleum products in Ohio, is considering the construction of additional product lines in that state.

The terminus of the company's product line extending west from its Marcus Hook, Pa., refinery, is located at Steubenville, in eastern Ohio.

BUCKEYE MODEL 12 digs more trench in less time, at lower cost. Digs trench 15" to 24" wide — up to 5½' deep.



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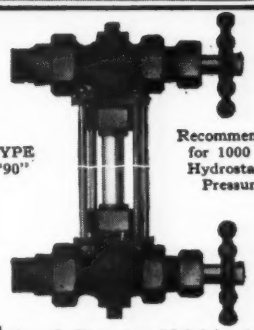

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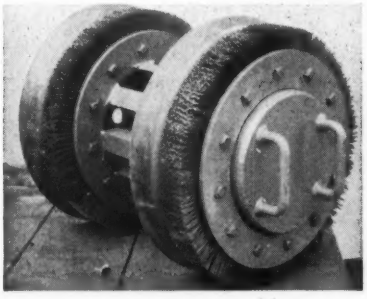

Type LCN Pipe Line Pig

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- Sizes 16 to 26-inch, inclusive.
- Rugged, light-weight steel construction.
- High velocity gas, jetting through enlarged by-pass, sweeps debris ahead of Pig.
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Types RC and SCN Pigs available for cleaning gas lines smaller than 16-inch.

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STATISTICS and

WEEKLY WELL COMPLETIONS... WEEK ENDED JULY 27, 1946

	Total of all wells					Cum.		Wildcat completions and discoveries					Cumulative total, 1946				
	Comp.	Oil	Gas	Dry	Footage	1946	1945	Oil	Dist.	Gas	Dry	Total	Oil	Dist.	Gas	Dry	Total
New York	28	14	0	*14	38,448	894	787	0	0	0	0	0	0	0	0	0	0
Pennsylvania	64	30	4	†30	102,313	2,266	2,289	0	0	0	0	0	0	0	0	0	0
West Virginia	15	1	10	4	37,359	396	466	0	0	0	0	0	0	0	0	0	0
Ohio	28	7	14	7	72,212	680	514	0	0	0	0	0	2	0	10	21	33
Indiana	76	9	0	7	27,965	202	106	0	0	0	0	0	2	0	0	11	13
Kentucky	23	9	8	6	39,011	279	259	0	0	0	0	0	2	0	0	20	22
Illinois	54	33	0	21	137,129	1,241	953	1	0	0	15	16	24	0	0	228	252
Michigan	12	4	1	7	23,229	450	426	0	0	0	5	5	15	0	5	146	166
Kansas	42	23	3	16	133,785	1,116	946	1	0	0	10	11	16	0	0	143	159
Neb., Mo., Iowa	0	0	0	0	0	9	12	0	0	0	0	0	0	0	0	5	5
Oklahoma	70	30	17	‡23	212,884	1,426	1,380	1	0	0	9	10	45	0	25	176	246
Texas	160	94	12	54	688,700	4,554	4,125	4	0	1	24	29	108	18	17	735	878
North Central	58	31	2	§25	172,423	1,645	1,232	2	0	0	9	11	30	0	2	302	334
West	35	32	0	3	156,765	954	1,066	1	0	0	1	2	30	0	1	97	128
Panhandle	7	0	6	1	20,864	193	316	0	0	0	0	0	0	0	0	5	5
Eastern	12	7	1	4	63,051	405	189	0	0	0	3	3	10	0	1	52	63
Gulf Coast	36	23	2	11	237,346	1,013	934	1	0	0	4	5	25	16	7	149	197
Southwest	12	1	1	10	38,251	344	388	0	0	1	7	8	13	2	6	130	151
Louisiana	28	14	3	11	157,358	743	578	0	1	0	5	6	32	6	4	97	139
Northern	17	8	2	7	66,894	407	211	0	0	0	4	4	6	0	0	53	59
Southern	11	6	1	4	90,464	336	367	0	1	0	1	2	26	6	4	44	80
Arkansas	2	1	0	1	5,551	102	102	0	0	0	1	1	4	0	0	21	25
Mississippi	0	0	0	0	0	146	202	0	0	0	0	0	1	0	1	40	42
Southeastern States	0	0	0	0	0	25	35	0	0	0	0	0	1	0	0	21	22
Montana	7	4	2	1	14,463	166	181	0	0	1	0	1	9	0	1	18	28
Wyoming	3	2	0	1	9,755	96	112	1	0	0	1	2	10	0	3	25	38
Colorado-Utah	3	2	0	1	18,373	77	22	0	0	0	1	1	3	0	0	10	13
New Mexico	9	7	0	2	37,897	206	250	0	0	0	0	0	3	0	0	23	26
California	34	25	2	7	141,656	1,031	1,340	0	0	0	5	5	5	0	3	124	132
Total United States	598	309	76	213	1,898,088	16,105	15,085	8	1	2	76	87	282	24	69	1,864	2,239
Total previous week	576	284	80	212	2,048,384	15,507	14,489	4	0	3	75	82	274	23	67	1,788	2,152
Total July 28, 1945	596	315	50	231	1,931,768			15	0	2	77	94	306	16	79	1,929	2,330

Service wells included: *14, †30, ‡3, §2.

MARKET QUOTATIONS

GRAVITY SCHEDULES

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity—	Signal Hill, Calif.	Okla-homa, Kansas	Gulf Coast Texas	West Tex.*
18-18.9	$1.03	....	....	....
19-19.9	1.03	....	$1.41	$1.05
20-20.9	1.03	$1.20	1.43	1.07
21-21.9	1.03	1.22	1.45	1.09
22-22.9	1.06	1.24	1.47	1.11
23-23.9	1.10	1.26	1.49	1.13
24-24.9	1.13	1.28	1.51	1.15
25-25.9	1.17	1.30	1.53	1.17
26-26.9	1.21	1.32	1.55	1.19
27-27.9	1.25	1.34	1.57	1.21
28-28.9	1.28	1.36	1.59	1.23
29-29.9	1.30	1.38	1.61	1.25
30-30.9	1.33	1.40	1.63	1.27
31-31.9	....	....	1.42	1.65	1.29
32-32.9	....	....	1.44	1.67	1.31
33-33.9	....	....	1.46	1.69	1.33
34-34.9	....	....	1.48	1.71	1.35
35-35.9	....	....	1.50	1.73	1.37
36-36.9	....	....	1.52	1.75	1.39
37-37.9	....	....	1.54	1.77	1.41
38-38.9	....	....	1.56	1.79	1.43
39-39.9	....	....	1.58	1.81	1.45
40 and above	....	1.60	1.83	1.47

*Includes Lea County, New Mexico.

(Quotations shown here are f.o.b. plant in tank cars and in cents per gal. as of last Monday. Crude prices reflect latest 25-cent advance except in California and Pennsylvania where no increase had been made as of Monday morning, July 29.)

REFINERY GASOLINE

Octane (A.S.T.M.)	78-78½†	73-75
Mid-Continent*	7.250-7.500	6.500-7.000
Tex. Gulf Coast	6.875-7.125	6.250-6.500
New York Harbor	8.600	7.700
California		6.000-6.875

*Basic Oklahoma Group 3. †1939 C.F. R. (research method).

NATURAL GASOLINE

Grades—	26-70	18-55
Oklahoma (Group 3)	3.750	4.500
N. Texas (f.o.b. plant)	3.250	3.900
N. Louisiana (f.o.b. plant)	3.625	4.350
California	4.875	5.500

CRUDE-OIL PRICES

Representative posted schedules per bbl.

East Texas	$1.60
Willamar	1.35
Beauregard Parish	1.55
Illinois Basin	1.72
Pecos County, Texas	1.30
Bradford, Pennsylvania	3.10
Eastern Ill., and Western Ind.	1.57

Note: Exclusive of subsidy.

A.P.I. REFINERY REPORT

(Figures in thousands of barrels)

	Dly. crude runs to stills	Stocks Gaso-line	Dis-tillate	Resid-ual
East Coast	763	22,905	13,214	9,563
Appalachian	139	3,181	581	353
Ill., Ind., Ky.	797	16,815	6,145	4,286
Okla., Kan., Mo.	378	7,711	2,681	1,380
Inland Texas	220	2,805	445	709
Tex. Gulf Cst.	1,220	13,697	7,016	4,836
La. Gulf Cst.	336	4,186	2,158	1,447
N. La., Ark.	59	1,856	421	170
Rocky Mtn.	128	1,823	530	798
California	786	14,347	9,420	25,635
Total 7-20-46	4,826	89,326	42,611	49,177
Total 7-13-46	4,875	90,753	41,897	48,330
Total 7-21-45	4,947	85,980	35,350	42,865

CRUDE-OIL STOCKS

(Bureau of Mines Estimate)

Week ended—	Bbl. of crude*
July 20, 1946	222,740,000
July 13, 1946	222,859,000
July 21, 1945	218,108,000

*Excludes unrefinable Calif. stocks.

TRENDS

DAILY AVERAGE PRODUCTION FOR WEEK

	July 27 crude oil	B. of M. July demand	July 20 crude oil
Alabama	1,150	950	1,150
Arkansas	78,900	78,000	80,500
California	872,750	844,000	887,750
Colorado	32,750	28,000	32,450
Eastern	61,600	64,000	64,000
Florida	200	250	200
Illinois	209,800	210,000	206,900
Indiana	18,900	19,000	18,650
Kansas	271,450	260,000	275,650
Kentucky	31,200	31,000	31,700
Louisiana	391,500	380,000	390,550
North Louisiana	90,850	.....	89,900
South Louisiana	300,650	.....	300,650
Michigan	45,900	47,000	46,500
Mississippi	64,900	60,000	64,000
Montana	25,800	22,000	25,130
Nebraska	800	800	750
New Mexico	98,150	97,000	98,150
Oklahoma	383,650	384,000	383,750
Texas	2,227,550	2,110,000	2,227,550
District 1 (Southwest)	19,500	.....	19,500
District 2 (Southwest)	158,100	.....	158,100
District 4 (Southwest)	228,000	.....	228,000
District 3 (Gulf Coast)	511,350	.....	511,350
District 5 (Eastern)	44,150	.....	44,150
District 6 (Eastern)	107,800	.....	107,800
East Texas Field	315,000	.....	315,000
District 7C (West)	28,000	.....	28,000
District 8 (West)	569,150	.....	569,150
District 7B (W. Central)	32,000	.....	32,000
District 9 (N. Central)	129,300	.....	129,300
District 10 (Panhandle)	85,200	.....	85,200
Wyoming	111,500	112,000	112,460
Total United States	*4,928,450	4,748,000	4,947,790
Change from prev. wk., down	19,340		

Total production January 1-July 27 ..... †980,272,059 bbl.
Same period last year (crude, plus condensate) 1,001,102,400 bbl.
*Not incl. 21,500 bbl. condensate. †Incl. 5,210,400 bbl. condensate.

CRUDE-OIL STOCKS 222,740,000 bbl. as of July 20—down 119,000 bbl. One year ago 218,108,000 bbl.

GASOLINE STOCKS 89,326,000 bbl. as of July 20—down 1,427,000 bbl. One year ago 85,980,000 bbl.

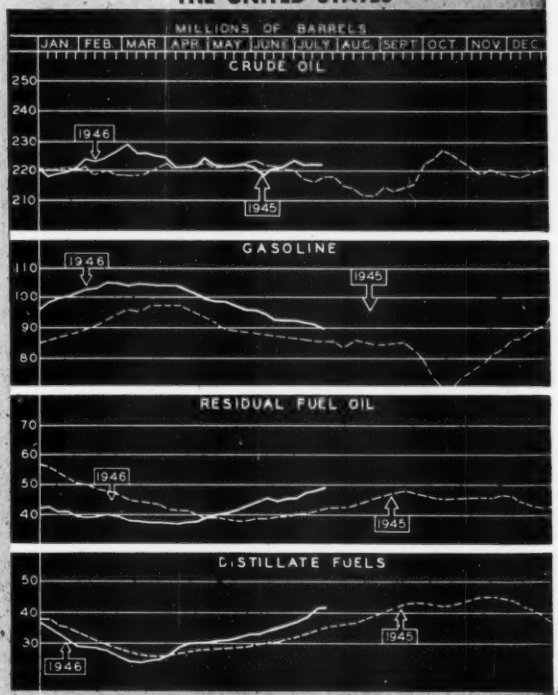
RESIDUAL FUEL-OIL STOCKS 49,177,000 bbl. as of July 20—up 847,000 bbl. One year ago 42,865,000 bbl.

GAS OIL AND DISTILLATE STOCKS 42,611,000 bbl. as of July 20—up 714,000 bbl. One year ago 35,350,000 bbl.

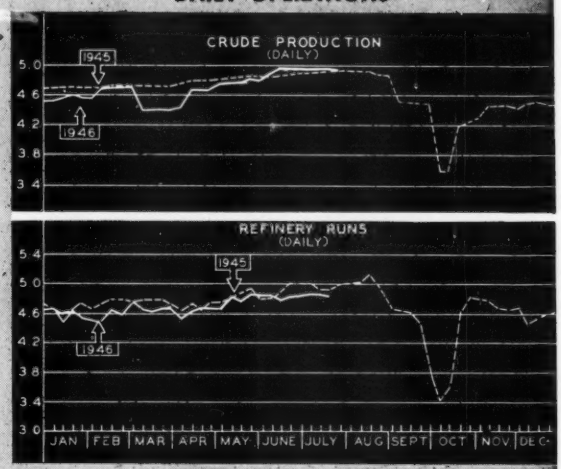
CRUDE-OIL PRODUCTION 4,928,450 bbl. as of July 27—down 19,340 bbl. One year ago 4,928,200 bbl.

REFINERY RUNS 4,826,000 bbl. daily week ended July 20—down 49,000 bbl. One year ago 4,947.000 bbl.

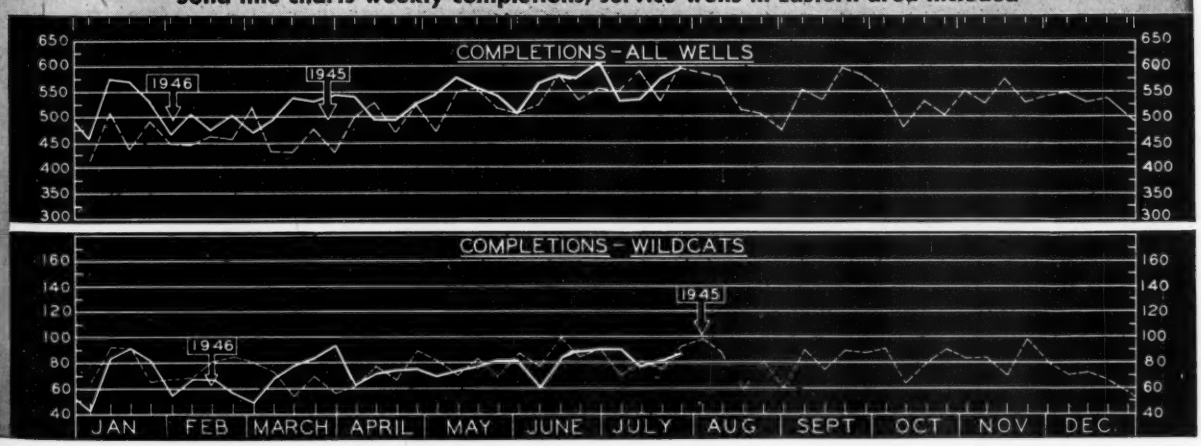
OIL STOCKS IN THE UNITED STATES



DAILY OPERATIONS



Solid line charts weekly completions, service wells in Eastern area included



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Exploration and Drilling

Erratic Sand at Delhi

A TWO-MILE northwest extension in the Delhi stratigraphic trap in North Louisiana is assured by Press Cochrane 1 Sayre, SE SE SW 34-17n-7e. While complete official information is not yet available, there is sufficient data to indicate that this test may have significance beyond its importance as an extension well. It is reported making 6 to 8 bbl. per hour from the Tuscaloosa, which although making a nice well for the area, and extending the field, is not too exciting.

The pay depths are something else. Reports are that a gas zone was found at 2,595-2,600 ft., oil saturation at 2,600-05 ft., and water at 2,605-12 ft. The casing was perforated opposite a 3-ft. interval at 2,600-03 ft. These depths put the oil level lower than the Sellers 1 Burke, a Tuscaloosa gas well in Section 4-16n-7e, 1½ miles southwest. Thus the Cochrane extension well gets oil at a level lower than the gas zone only a mile and a half away.

Together with other information, this begins to look as if there is not necessarily any constant, continuous gas-oil or oil-water contact level. Since the trace of the Tuscaloosa pinchout that forms the trap can now be followed pretty well, and the down dip oil-water level was thought to be fairly well established, it had been thought that perhaps the gradual development and extension of the field would be reasonably simple.

Now it begins to look as though there would be other problems, calling for close study of the sedimentary conditions. It appears likely that there are reentrants along the old shore line of perhaps varying sizes. These will possibly find the sand eroded, or partially eroded and a shale phase in its place.

It also appears likely that even where the complete facies change from sand to shale does not take place, there may be cementation differences which will affect the porosity and permeability of the sand, or there may be greater or lesser silting of clay particles, which will have the same effect.

The major stratigraphic trap-type fields of the past have usually had a large acreage where reasonably uniform depositional environment resulted in laying down a blanket of reservoir sand of good porosity and permeability with not too much local variation. Or, if of the limestone variety of trap, a large area where the environment was such that reasonably uniform porosity was developed over an extensive area.

However, even in the best of these strap trap fields, there are local variations in sand conditions, or in lime porosities. It is all a matter of proportion. Hence, if the Delhi area continues to grow and expand in area, what now looks like problems, may turn out to be only minor local variations.

EASTERN TEXAS

Mt. Sylvan Area Gets Second Failure

DALLAS.—Humble Oil & Refining Co. 1 Dowell, Sanders Survey, gave indication of being the second failure in the Mount Sylvan area of Smith County after core showed sand with a salty taste. The core was cut at 7,387-99 ft. and recovery was 11 ft. of gray sand with the salt water. The test is an east offset to the discovery. It ran over 70 ft. low to the discovery. First failure for the Paluxy pay area was the Pace & McLean southeast outpost on Johnson land.

Humble 1 Hale, Ables Survey, wildcat 1 mile north of Kemp in Kaufman County, was preparing to core for the Woodbine. Operators cut first core at 2,859-66 ft., but recovery was withheld. Austin chalk was topped at 2,062 ft. Temple Hargrove 1 Guy E. Wallace, John Jones Survey, wildcat 3 miles south of Richland, Navarro County, is fishing at 5,080 ft. in the lower Glenrose after core at 5,070-80 ft. recovered hard lime with slight show of oil. Humble 2 Pickering Lumber Co., W. D. Woodfin Survey, 1 mile southwest of the Huxley field oil discovery, Shelby County, perforated with 112 shots opposite the Pettit from 6,940-54 ft. and was testing. Total depth is 7,502 ft. The Texas Co. 1 Flatt, Hubbard Survey, in the Tundra area of Van Zandt County, was drilling below 8,000 ft., having based the massive anhydrite at 7,840 ft., with elevation of 549 ft. This is 21 ft. lower than the firm's 1 Stout, discovery in the Dickerson Survey.

Smithland field, Marion County, had three completions and Hawkins and Merigale fields, Wood County, had two each. Carthage field, Panola County, had four locations. Carthage field has 34 drilling wells; Hawkins field 17; Sand Flat field, Smith County, five; and New Hope field, Franklin County, four.

EASTERN TEXAS WILDCAT FAILURES

Anderson County: Tex-Harvey et al 1 Mrs. L. B. Hall, S. Rocha Sur., 6 mi. S Palestine, elev. 337 ft., Woodbine 5,517 ft., Buda 6,504 ft., dry, TD 6,524 ft.

Cherokee County: Hunt Oil 1 Andrews, Jose Pineda Sur. A-40, 2 mi. W Jacksonville, James 9,205 ft., Pettit 9,405 ft., dry, TD 9,876 ft.

Freestone County: O. W. Killiam 1 fee, A. Sanchez Sur. A-553, 4 mi. E Burleson Hill, elev. 396 ft., dry in Woodbine, TD 5,225 ft.

APPALACHIAN FIELD

Second Briery Well Running 110 Ft. High

PITTSBURGH.—On Briery anticline in Portland district, Preston County, West Virginia, Wm. E. Snee et al logged the Tully lime at 4,895 ft. or —2,859 ft. in the test on Harrison Sisler farm, compared with a —2,969 ft. in No. 2 which has been gaging in excess of 50,000 cu. ft. gas a day natural from the Oriskany sand. With the new test running 110 ft. higher than the Tully, if a normal interval exists to the Corniferous chert, it may open a new gas pool of size.

The Oriskany rotary test near Bergton in Rockingham County, Virginia, on the Casper Dove farm, drilled by the James Oil & Gas Co., is reported a failure with salt water intruding and a total depth of 2,670 ft. It is located about ½ mile southwest of the test on the Souder farm which has a volume of about 60,000 cu. ft. of gas in the top of the sand and which was not drilled deeper in the Oriskany.

In Ravenswood district, Jackson County, United Fuel Gas Co. completed No. 5,744 Homer Nelson in the Oriskany sand with a final open flow of 5,034,000 cu. ft. natural. Ths Corniferous lime was placed at 4,829 ft., Oriskany 4,935 ft., gas 4,945-58 ft., rock pressure 890 lb. 24 hours, total depth 4,976 ft.

In the extension to the Elk-Poca field in Kanawha County, Falling Rock Producing Co. is completing its 77 fee which is showing 2,000,000 cu. ft. gas in the Oriskany sand topped at 5,116 ft., total depth 5,147 ft.

In Harper district, Roane County, Bonnett Oil & Gas Co. completed a test on Hayward Rhodes good for 947,000 cu. ft. gas from the Salt sand, total depth 1,716 ft.

In Penn Township, Allegheny County, Paul R. Schwer et al are 31 ft. in the Hundred Foot sand in the test on Fannie R. Stotler farm and the hole has filled up 1,100 ft. with water with a small oil showing. It is an offset to the recent fair oil well on the Alcoma Country Club.

New work increased with 21 locations announced during the week which are scattered in Forward and Plum townships, Allegheny County; Bethel, East Franklin, Gilpin, Kiskiminitas, Kittanning, Plum Creek, Red Bank, and Wayne townships, Armstrong County; Luzerne Township, Fayette County; Conemaugh Township, Indiana County; North Strabane, Deemston and Amwell townships, Washington County.

New locations in West Virginia totaled 25 and located in Union district, Barbour County; Otter district, Braxton County; Crook district, Boone County; Sherman

and Washington districts, Calhoun County; Elk district, Kanawha County; Jefferson district, Lincoln County; Grant district, Marion County; Kermit district, Mingo County; Grant district, Nicholas County; Union district, Pleasants County; Curry district, Putnam County; Clear Fork district, Raleigh County; Clay district, Ritchie County; Lincoln district, Wayne County; Clay district, Wirt County; Harris & Williams districts, Wood County; Clear Fork district, Wyoming County.

MICHIGAN

Poor Week for Wildcatters

SAGINAW.—Four of the 12 completions for the week in Michigan fields were oil wells, one was a small gasser, the rest dry holes, including five wildcats. Bulk of the initial production came from two new producers in Arenac County, one in the Adams, the other in the Deep River pool. The other wells are Bay and Kent County developments, the later accounting for two new locations announced for Algoma Township.

The Algoma well was acidized for 40 bbl. per hour. The new Deep River well's potential was 140 bbl. per hour, that of the Adams completion an estimated 300 bbl. a day, after acidizing. The Hampton - Bay producer was good for 168 bbl. a day after acidizing. Seven other new locations were announced, two each in Arenac and Allegan counties, the others in Lake, Oakland and Mecosta.

MICHIGAN WILDCAT FAILURES

Allegan County, Heath Township: R. T. Jones 1 Slotman, SW NW SW 28-3n-14w, dry in Traverse limestone, TD 1,414 ft.

Gratiot County, Sumner Township: C. L. Maguire, Inc. 1 Redman, NE NW NE 2-11n-4w, dry in Dundee, TD 3,328 ft.

Kent County, Spencer Township: Michigan Consolidated Gas Co. 1 Medler, C-NW 10-10n-9w, dry, TD 1,000 ft.

Lake County, Chase Township: Panhandle Eastern Pipeline Co. 1 Ichenberg, SW NE SE 28-17n-11w, dry, TD 1,408 ft.

Livingston County, Howell Township: Bridgeport Oil Co., Inc. A-1 Ryhl, NE SW SW 6-3n-4e, dry in Monroe, TD 1,258 ft.

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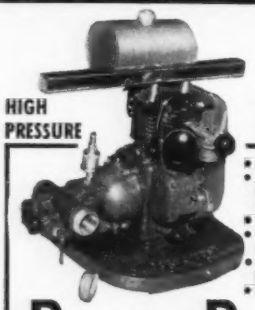

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CALIFORNIA

Small Pumper Indicated at El Segundo-Playa Del Ray

LOS ANGELES. — A relatively small pumper is expected to be finished in the El Segundo-Playa Del Rey area within the next several days as the joint wildcat test in 2-3s-15w, which Shell is drilling for six major companies failed to show a natural flow and is being prepared for a pumping test. The well was drilled into the basement at 7,033 ft., and later plugged back to 6,940 ft. to exclude bottom water. Failure of the well to show a natural flow is a distinct disappointment as this area has generally been regarded as having considerable merit.

Tide Water Associated is preparing to proceed with deep zone exploration in the Kern River field where the company recently completed a deep zone test that was not produced. The next test will be in 29-28s-28e, about ½ mile east of the original test in Section 30. Tide Water Associated has leased approximately 200 acres since drilling its first deep exploratory well, paying good bonus prices, which indicate the company is sold on the probability of Vedder or Eocene production.

Richfield Oil Corp. is building derrick for a wildcat to be drilled in the Boyle Heights area in Section 31-1s-12w on the Hellman anticline on which several tests were previously drilled without success. One well, however, is reported to have had several shows but was abandoned without a test when the drilling budget was exhausted. This well was not any too favorably located with respect to structure and the new test may be better located. Richfield's lease comprises approximately 2,000 small parcels.

Richfield probably expects a deep-seated anticline in rocks of Miocene age as was found in the East Los Angeles field several months ago. The company's operations at East Los Angeles field consist of three wells drilling and one suspended. The idle well is 1 Keller in Section 9-2s-12w at 9,358 ft. The bottom of this hole is located beneath the town lot section several hundred feet north of the surface location so that the vertical depth is somewhat less than the total deviated depth. This well showed production possibilities higher up in the hole although some water was present below the shoe of the 8⅝-in. casing cemented at 7,576 ft.

Whittier Associates may have an oil well in 11-7n-32w, on the Barham property in the Los Alamos wildcat district of Santa Barbara County although this will not be definitely determined until a conclusive production test has been made. This wildcat pumped 50 to 75 bbl. of clean 25°-28° oil with the hole bottomed at 5,848 ft., 8⅝-in. casing landed at 5,530 ft.

Upon completion of this preliminary production test, the company resumed drilling and is going ahead at 5,931 ft., with the present objective the chert basement which has been found productive in adjacent areas, notably at Gato Ridge to the north. This is the third wildcat drilled by these operators in the Los Alamos district and it is the best looking drilled to date.

New locations exceeded completions this week after several weeks during which there was relatively little difference. The current locations, 48 in number, include 7 locations for new gas wells to be drilled in proved fields. These new gas tests were one each at Rio Vista, Dixon and McDonald Island and two each at Thornton and Kirby Hills. The wildcat list was about a standoff with five completions and six new locations made. San Joaquin Valley again led the list of new locations with 18, followed by Los Angeles Basin with 10 and the Coastal district with 7. There has been no great change in the amount of drilling throughout the state although there has been same change between the various fields.

CALIFORNIA WILDCAT FAILURES

Kern County, Cymric: Independent Exploration Co. 1 Anderson, 18-29s-21e, bottomed in gray sand, no important showings, top brown shale 1,274 ft., top Carneros 1,638 ft., Carneros sand was barren, TD 1,775 ft.

Fruitvale: National Iron Works 1 Galtes, 14-29s-27e, bottomed in gray sand, only minor showings logged, TD 3,463 ft.

Jasmine: Finch Oil Co. 1 Jasmine, 27-25s-28e, bottomed in granite basement, no showings of any kind, TD 697 ft.

Los Angeles County, Montebello: Locico Oil Co. 1 North Montebello, 35-1s-12w, bottomed in sandy shale, lost hole because of mechanical difficulty, TD 5,219 ft.

Tehama County, Corning: Superior 2 Saldubehere, 35-24n-3w, bottomed in barren gray sand, low structurally and off Corning anticline, TD 2,310 ft.

CANADIAN FIELDS

West Flank Extension For North Turner Valley

CHATHAM.—On the west flank of North Turner Valley, Home Oil 22, LSD 16, 32-20-3w5, reached the Madison at 8,434 ft. and is deepening after setting 7-in. at 8,443 ft. The limestone at this depth indicates good prospects of a producer, which will open a considerable west flank area for development. Farther north, another west flank test, Home 23, LSD 7, 5-21-3w5, is below 7,960 ft. with Home sand at 7,610 ft. Two other tests are drilling in Turner Valley.

Stolberg.—In the Central Foothills, Imperial-Shell-Stolberg 1, LSD 3, 22-41-14w5, is deepening in the second Madison limestone horizon, contacted at 12,820 ft. with only a slight porosity indicated. The test, now below 13,109 ft., has established a new deep drilling record for Alberta. The previous record was Imperial - Coalspur 1, abandoned last year at 12,955 ft.

Duvernay.—In North Central Alberta, Imperial Oil is continuing development work on the Duvernay structure, north of Edmonton, with Duvernay 4 rigging in LSD 6, 33-66-11w4. Location is about 7 miles north of Duvernay 1. Duvernay 2, LSD 11, 29-55-12w4, was previously abandoned at 2,969 ft.

West Viking.—In the western portion of the Viking area, West Viking 1, LSD 10, 11-48-15w4, sponsored by the Home-Anglo-Canadian-Calgary & Edmonton group, has been abandoned at 3,025 ft. A drill-stem test showed considerable gas at 2,792-2,833 ft. but water was encountered a little lower in the Devonian. Rig is being moved to drill Shell-Fribourg 31-32, LSD 14, 32-54-9w4.

Baxter Lake.—In the Baxter Lake section of the Wainwright field, Baxter Lake 1, LSD 12, 20-46-5w4, has drilled out plug after cementing 8⅝-in. casing at 2,086 ft. and is testing oil and gas showings in the

Wainwright sand of the Lower Cretaceous.

Smoky River.—Preliminary preparations are being made on a projected development in the Smoky River area of the northern Alberta foothills, sponsored jointly by McColl Frontenac, Imperial, Shell Exploration, Socony-Vacuum and Gulf Oil. The companies hold leases on approximately 200,000 acres with options on an additional 1,044,000 acres, and some seismographic work has already been done. A 70-mile road is being constructed from Entrance, on the Edmonton-Jasper highway to permit hauling of heavy-duty rotary equipment to location.

Kinsella.—In the Kinsella field, Imperial-Kinsella 17, LSD 7, 14-16-11w4, finished at 2,310 ft., with indications of a gasser, got salt water at depth, and has plugged back to retest gas shows in the Viking sand.

Elk Point.—In North-Central Alberta, Elk Point 1, LSD 7, 26-56-5w4, is below 3,628 ft. and making a deep test of the formation after encountering oil and gas shows in the Lower Cretaceous.

British Columbia.—Hon. John Hart, premier of British Columbia, has announced the Peace River district in the northern part of that province will be opened for oil exploration this fall. Dr. T. B. Williams, commissioner of petroleum and natural gas, will draft regulations covering exploration, after which actual development can commence. Several large oil companies already have geologists investigating the area.

Saskatchewan.—In western Saskatchewan, Bata-Province 1, LSD 4, 5-35-28w3, a joint test by Bata Petroleums, Vera Oilfields and Superior Oils, is coring for the Viking sand at 2,335 ft. Farther north, Bata Petroleums 16, LSD 11, 24-41-24w3, drilled as a water well, struck a shallow gas flow which settled to around 375,000 cu. ft.

SOUTHWEST TEXAS

Brooks and Duval Counties Each Get New Gas Field

CORPUS CHRISTI.—Two new gas discoveries were brought in this week in the Southwest Texas District, one southeast of Falfurrias in northeastern Brooks County, and the other a mile southeast of production in the East Peters field of Duval County.

Southeast of Falfurrias, Sun Oil Co. 6 D. J. Sullivan, northeast of Gyp Hill dome in Loma Blanca Grant, is cleaning through a $\frac{7}{8}$-in. choke with 1,500 lb. pressure from 10 perforations at 10,478 to 479 ft. Initial pressure was 4,000 lb., which was bled off before resuming the test. Hole bottom is at 13,206 ft., and has 5-in. liner cemented at 12,180 ft.

A mile southeast of the East Peters field, Duval County, Cox & Hamon 1 Leila Peters flowed gas on drill-stem tests with an average of 500 lb. pressure and bottom-hole flowing pressure of 750 lb. Tests were made at 2,613 to 19 ft., 2,619 to 25 ft., and 2,634 to 39 ft. Total depth of the hole is 2,700 ft., and production string is cemented to 2,690 ft.

W. G. Glenn No. 1 A. R. O'Neal, wildcat in Milam County, 7 miles northeast of Rockdale and 2½ miles east of the Minerva field, is testing oil shows in the Edwards lime at 4,090 to 4,121 ft. Production string, 5½-in., is set at 4,084 ft.

Stanolind Oil & Gas Co. 1 L. A. Reagan, ¾ mile southwest of gas-condensate discovery at Oakville, Live Oak County, has gauged its oil discovery flow at 92 bbl. daily through an ¼-in. choke with 1,200 lb. tubing pressure and 1,750 lb. casing pressure, having a gas-oil ratio of 2,830 to 1. It produces from bottom of hole at total depth 6,738 ft.

An 8,200-ft. southwestward extension of the oil production at Jourdanton field was assured this week by Humble Oil & Refining Co. 1 John Sandeen in Jas. P. Gorman Survey 1,189, Atascosa County. On an

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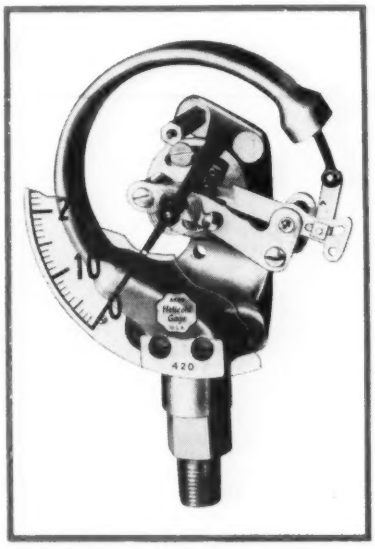

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initial test, the well flowed 30.66 bbl. of oil through a ¼-in. choke with a gas ratio of 69 to 1. Tubing pressure was 110 lb. Production is from open hole in the Edwards lime at 7,384 to 87 ft., total depth.

Continental Oil Co. B-1 Albert West, 5,620 ft. southeast of production in the Albert West field, Live Oak County, has made a potential flow of 42.44 bbl. of 32.6° oil per day through a 9/64-in. choke with 200 lb. tubing pressure and 500 lb. pressure on the casing. Pipe was perforated from 6,787 to 89 ft. with 18 shots for completion. Gas-oil ratio is 786 to 1. The well is making 8 per cent salt water and possibly another squeeze job with plastic will be made to shut off the water encroachment.

Humble 23 Mrs. A. M. Kelsey Bass, wildcat deep test northwest of Kelsey field, Jim Hogg County, tested from perforations at 7,394 to 7,413 ft., and flowed mud and wash water with only a slight show of gas. Tubing has been pulled and perforations will be squeezed for another test in the same section.

Highland Oil Co. of Houston has gaged its 12 Halff & Oppenheimer, new pay discovery at Pearsall field, in Frio County, at 36,000,000 cu. ft. of gas per day on open flow with about 1 bbl. of condensate per million cubic feet of gas. Bottom-hole pressure is 1,975 lb., tubing pressure was 1,700 lb. and casing pressure 1,800 lb. through a $\frac{7}{16}$-in. choke. Flow is from perforations at 4,273 to 79 ft. in the top 6 ft. of a gas sand cored from 4,273 to 98 ft. Total depth depth is 4,335 ft. and 5½-in. casing is on bottom.

The Texas Co. 1 R. B. Love, a mile southwest of Charlotte and about 8,000 ft. southeast of nearest Navarro sand oil production at Charlotte field is swabbing for completion. Total depth is 5,355 ft. On tests prior to pipe setting, from 5,183 to 95 ft. and 5,195 to 5,220 ft. the well recovered oil-cut mud and some gas.

A total of 34 new locations were made in the Southwest Texas district this week, 8 being wildcat explorations, 4 in the Lower Gulf Coast district, 1 in the South Texas district and 4 in South Central Texas. There was but 1 successful wildcat, a gasser in Frio County, and 8 wildcat failures were counted. Sixteen oil wells and 2 new gassers were reported from proven territories.

SOUTHWEST TEXAS SUCCESSFUL WILDCAT

Frio County: New gas pay, Pearsall field—Highland Oil Co. 12 Halff & Oppenheimer, J. H. Gibson Survey 15, TD 4,335 ft., gas sands 4,273 to 79 ft., perf. 4,273 to 79 ft., PT 36,000,000 cu. ft. gas per day calculated open flow and 1 bbl. condensate per million, TP 1,700 lb., CP 1,800 lb., no water.

WILDCAT FAILURES SOUTHWEST TEXAS

Bee County: W. C. McBride, Inc. 1 State of Texas, 4½ miles northeast of Beeville, Teodora Molina Survey, Abst. 42, dry, TD 3,618 ft.

Duval County: Newman Bros. Drlg. Co. and Skinner & Eddy Corp. 1 A. Weill et al, 10 miles southwest of Freer, 1½ miles southeast of Cedro Hill field, B. Elizondo Survey 568, dry, TD 2,933 ft.

Jim Hogg County: Texas Co. A-2 T. T. East, 4 miles southwest of Hebbronville, Block 8, Don H. Marsh Subdn. of T. T. East lands, dry, TD 3,600 ft.

Starr County: Henshaw Bros. and Coastal Refineries, Inc. 3 Y. Sanchez, Survey 344, 12 miles north of Roma and 3½ miles northeast of Margo field, dry, TD 2,661 ft.

Travis County: Clyde D. Lane 1 Union Central Life Ins. Co., Jacob Betts Survey, dry, TD 909 ft.

Webb County: D. J. Moss 2 J. O. Walker, SW/4 NW/4 SE/4 GC&SF Survey 264, 2 miles northwest of Carolina Texas field, dry, TD 1,732 ft., no shows.

Webb County: Westbrook Oil Corp. 2 Mabel Adami, 2 miles south of Adami field, J. H. Gibson Survey 337, dry, TD 1,133 ft., no shows.

Zapata County: T. B. Hoffer 1 Acela V. de Gomez, 2 miles west of Echols field, Share 3, Porc. 31 and 32, dry, TD 2,260 ft.

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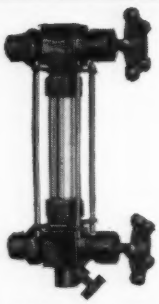

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SOUTH LOUISIANA

Big Island Tuscaloosa Discovery Makes Test

NEW ORLEANS.—Union Producing Co. et al 1 Belgard, NE NW 14-4n-3e, Tuscaloosa sand discovery in the Big Island field of Rapides Parish, is making a production gage. The well produced 270 bbl. of 46.3° oil in the first 18 hours with 1,800 psi. through a $\frac{7}{8}$-in. choke. Casing pressure fluctuated between 1,400 and 1,500 psi. during the test. The well produces through perforations 9,714-22 ft. and 9,684-9,700 ft. Total depth is 12,010 ft., and 5-in. pipe is cemented at 10,233 ft. Interested operators, Union Producing Co., Phillips Petroleum Co., Carter Oil Co., and Pat Marr of Dallas, have a total of 12,000 acres in the area, and an active drilling campaign is expected.

Claude F. Morgan's No. 1 Arthur Murphy, NE NW 31-14s-8w, wildcat test in the Creole area of Cameron Parish, was abandoned after cutting a fault and running 300 ft. low to his 1 LeBlanc Heirs, first test on the structure. Hole was bottomed at 9,510 ft. Morgan plans a third test in the area which is north of the Creole field, and Kirkwood and Morgan will keep their rig and derrick on the old test until a new location is stake. Work is being done on subsurface data collected from the two tests, the results of which will determine the location of the third test.

Another disappointment was Atlantic Refining Co.'s second abandonment in a series of four deep wildcats to be drilled in Lake Pontchartrain. The latest failure is the 1-B State on State lease 318, Orlenas Parish area, which bottomed at 11,073 ft. with no commercial shows. Salt water was found in most of the sands.

Tide Water Associated Oil Co. completed a good well through stuck 4-in. drill pipe in the Venice field of Plaquemines Parish. It was in its 31 Buras Levee District, 23-21s-30e, which flowed a potential gage of 230 bbl. of 35.5° oil in 24 hours through a 9/64-in. choke and a gas ratio of 895 to 1. Drill pipe was perforated with 24 shots from 10,175 to 185 ft. for the completion. Hole bottomed at 10,572 ft. where drill pipe became stuck while drilling.

The California Co. 4 E. P. Brady, Unit 4, wildcat test in the Alliance area, several miles southeast of Bayou de Fleur field of Jefferson and Plaquemines parishes, was at a total depth of 12,225 ft.

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where log was run, and is ready to set liner for a test. This is a possible new field discovery since the well is credited with several well saturated sands protected behind the 7-in. pipe at 11,185 ft.

Union Oil Co. of California is digging canal to location of its second wildcat test in the Bay Marchand area of Lafourche Parish. The new test is 2 City of New Orleans, 2,100 ft. north-northwest of the No. 1 hole which drilled through the dome's salt overhand finding only minor shows in sands below.

Pan American Production Co. 18 H. L. Garland "South" deep test in the Port Barre field of St. Landry Parish, 4-6s-5e, has been plugged back to 7,900 ft. for a directional hole after drilling to a total depth of 9,249 ft. A new sand section which was tested through the drill stem from 8,268 to 90 ft. failed to show commercially, developing only 10 lb. pressure and recovering 200 ft. of 33° oil with 400 ft. of oil-cut mud.

Humble Oil & Refining Co. is ready to attempt confirmation of Shell's new sand production on the north flank of Napoleonville, Assumption Parish, with its 1 Kessler-Sternfels, 33-12s-13e, offset to the Shell producer. Squeeze jobs have been made 8,840 to 43 ft., and 8,860 to 63 ft. prior to perforating for production. Hole bottoms at 9,370 ft. and 5½-in. pipe is cemented to 9,143 ft.

Eleven new explorations were located in the South Louisiana district last week, 5 of which were wildcat tests, one each in Evangeline, Jeff Davis, Lafourche, Plaquemines, and St. Mary Parish. One new completion was completed at Bayou Mallet in Acadia Parish and one dry hole was a result from Orleans Parish. Six oilers, and one dry hole were reported from proven fields.

SOUTH LOUISIANA SUCCESSFUL WILDCAT

Acadia Parish: New sand, Bayou Mallet field—Union Sulphur Co. 1 Willie Sattler, Section 52-7s-1e, TD 8,972 ft., sands show gas and condensate 8,450-74 ft., perf. 8 holes 8,465 to 67 ft., PT 32.40 bbl. condensate per day with 2,500,000 cu. ft. gas per day, 10/64-in. choke, gas-condensate ratio 16,300 to 1, gravity 58.2°, TP 3,100 lb.

SOUTH LOUISIANA WILDCAT FAILURE

Orleans Parish: Lake Pontchartrain wildcat —The Atlantic Refining Co. B-1 State, State lease 318, Township 11s-12e, dry, TD 11,073 ft., no shows.

PERMIAN BASIN

New Pay for N. Monahans

MIDLAND.—Stanolind Oil & Gas Co. 8 Sealy-Smith, Section 48, Block A, G&MMB&A Survey, 1¼ miles south of production in the North Monahans (Tubb) pool of southern Winkler County, has opened a new pay for the pool. After topping the Glorietta at 5,070 ft. and finding shows from 5,181-5,224 ft., operator ran a 70-minute drill-stem test from 5,180-5,224 ft. There was gas to the surface in 5 minutes estimated at 1,000,000 cu. ft. daily. It flowed oil in 50 minutes, rated at 20 bbl. of 36° oil per hour, no water. Casing will be run for completion.

Ralph Lowe 1 Sealy-Smith, Section 71, Block A, G&MMB&A Survey, wildcat 2½ miles northwest of the North Monahans field, recovered 350 ft. of gas and oil-cut mud on a 53-minute drill-stem test from 4,966-5,055 ft. there was no water. Operator was drilling ahead. Hunt Oil Co. 1 E. R. Hill, Section 9, Block B-11, Public School Lands, wildcat 8 miles south and slightly east of Kermit, Winkler County, swabbed dry through casing perforations from 6,100-10 ft. both before and after treating the Tubb zone with 500 gal. of mud acid. It was treated with 1,000 gal. of acid and was swabbing an estimated 4 bbl. of fluid hourly, 90 per cent salt water and 10 per cent 34° gravity oil.

Skelly Oil Co. 1 D. C. Huddleston, Section 11, Block 19, T&P Survey, southeastern Fisher County wildcat, 8 miles northwest of Trent, having showed for a small discovery from the Canyon had later prospects of better pay in the Palo Pinto. A 3-hour drill-stem test was run from 4,378-4,400 ft. in the Palo Pinto zone. There was gas to the surface in 15 minutes. Operator pulled 180 ft. of dry drill pipe, then recovered 60 ft. of drilling mud with no shows. Then the drill pipe unloaded an estimated 2,250 ft. of heavily oil and gas-cut mud. The next 60 ft. was 42.6° gravity oil. Final recovery was 1,850 ft. of heavily oil and gas-cut drilling mud. There was no water. Flowing pressure was 600 lb. at the start of the test. It had built up to 1,750 lb. at the end of the period. Top of the Palo Pinto is 4,371 ft. with elevation of 1,854 ft.

At Texas Co. 1-P State, Section 15, Block 12, University Lands, Andrews County wildcat northwest of the Martin pool, oil load and residue was being swabbed after 7,000 gal. of acid had been injected through perforations from 7,170-7,250 ft. Previous to the injection, the well had swabbed and flowed 165 bbl. of oil in 24 hours after treatment with 3,000 gal. Stanolind Oil & Gas Co. 1-LL University is a new test ¾ mile west of two Devonian producers in the Three Bar field of Andrews County, it is 660 ft. from the south and east lines of the north half of Section 18, Block 11, University Lands. It is scheduled to drill to 8,600 ft.

Sharon Ridge field, Scurry County, had four completions this week; McCamey field, Upton County, three; McElroy field, Upton County; Slaughter field, Cochran County, and Fullerton field, Andrews County, had two each. Fullerton and Sharon Ridge fields each had five locations; Keystone-Colby and Keystone-Ellenburger fields, Winkler County, each three; and TXL-Devonian and TXL-Ellenburger fields, Ector County, two each. TXL field has 35 drilling wells; Fullerton field, 29; Keystone-Ellenburger field, 23; Welch field, Dawson County, 17; Todd Deep field, Crockett County, 6; and Martin field, Andrews County; Keystone-Holt field, Winkler County; and North Goldsmith field, Ector County, 5 each.

WEST TEXAS SUCCESSFUL WILDCAT

Ector County: New oil pay—Phillips 1-A-E Phillips-TXL, Sec. 39, Blk. 45, T-1-S, T&P Sur., TXL field, elev. 3,248 ft., flowed 139 bbl. day through ¼-in. choke on 2-in. tubing, perf. 5,615-30 ft. Clearfork, gravity 36.5°, gas-oil ratio 1,080 to 1, TD 11,506 ft.

WEST TEXAS WILDCAT FAILURE

Kent County: Humble 1 Moore et al, Sec. 45, Blk. 5, H&GN Sur., ½ mi. W outpost to Polar pool, elev. 2,325 ft., Ellenburger 7,840 ft., dry, TD 7,978 ft.

SOUTHEASTERN NEW MEXICO

HOBBS.—DeKalb Agricultural Association, Inc. 1 Lewis, 13-10s-25e, Chaves County wildcat 15 miles northeast of Roswell, was expected to plug after pulling a core begun at 5,650 ft., reportedly in granite.

Repollo Oil Co. 1-367, 36-21s-37e, east outpost to production from the lower Permian in the Drinkard area of southeastern Lea County, was completed following treatment with 2,000 gal. of acid, flowing 198 bbl. of oil in 24 hours through perforations from 6,460-6,500 ft. Magnolia 12 Brunson-Argo, 9-22s-37e, is a new producer for the Brunson area of Lea County. On official test it flowed 106.5 bbl. of oil in 24 hours through ¾-in. choke on 2-in. tubing. Gas-oil ratio was 563 to 1. Production is through perforations from 6,450-6,540 ft.

Caprock field, Chaves County, and Langlie Mattix field, Lea County, each had two completions. Fren field, Eddy County, and Langlie Mattix and Paddock fields, Lea County, each had two locations. Drinkard and Paddock fields, Lea County, have 17 drilling wells each; Square Lakes and Grayburg-Jackson fields, Eddy County, each have 10; and Brunson field, Lea County, five.

N. CENTRAL TEXAS

Test Staked 2½ Miles North of Hildreth Pool

WICHITA FALLS.—Phillips Petroleum Co. has staked a 6,300-ft. wildcat in Montague County 6 miles south of Belcherville. It is 1 S. D. Howard, 1,080 ft. from the southwest line and 700 ft. from the northwest line of Guadalupe College Survey, Abstract 267. The new test is 2½ miles north of the Hildreth pool and 1½ miles east of Venmex 1 Arveson, a producer. Bennett & Sorrells 1 C. S. Milton, Section 13, Titus County School Land, wildcat 6 miles east of Sunset, Montague County, plugged back to 6,380 ft. from 8,017 ft. and perforated casing with 10 shots from 6,323-24 ft. Gas broke in between the 10-in. and 7-in. casing and nearly blew the gun perforator out of the hole. It was then swabbed down preparatory to perforating at around 6,100 ft.

The Texas Co. 2 J. R. Handy, Samuel Stewart Survey, Abstract 1069, has opened a new shallow field 10 miles northwest of Gordonville, Grayson County. It flowed 106.64 bbl. of oil in 5 hours through ½-in. choke with casing set at 1,665 ft. The oil tested 39.6° gravity. Standard Oil Co. of Texas 1 A. J. Mitchell, J. B. McNair Survey, deep wildcat 1½ miles northwest of Sherman, Grayson County, cored from 10,040-53 ft. and recovered 4 ft. of green waxy shale with partings of limestone, 4 ft. of white to dark gray sandy lime, fossiliferous and slightly conglomeritic, imbedded with green shale. It was drilling below 10,078 ft. in lime and shale. Denver Producing & Refining Co. 1 Rich, I&GN Survey, Abstract 1,439, 10,000-ft. wildcat 7½ miles northwest of Gordonville, was drilling below 8,450 ft.

Electra field, Wichita County, had four completions; Holliday field, Archer County; Hildreth field, Montague County; and National field, Wilbarger County; each had two. Holliday field; K-M-A; and Sunshine fields, Wichita County, each had three locations, and Muenster field, Cooke County; National field, Wilbarger County; and Garvey field, Young County, each had two. Cooper field, Archer County, has seven drilling wells; National field, Wilbarger County, six; Ross field, Clay County; Sivell's Bend field, Cooke County; and Rose field, Haskell County, each four.

In West Central Texas, Lewis Steffins field, Jones County; Loving field, Stephens County; and Jones County Regular field, each had two completions. Lewis Steffins field had three locations; Santa Anna field, Coleman County; and Eastland and Jones County Regular fields each had two. Eolian field, Stephens County, and Lewis Steffins field, each have five drilling wells; Eastland County Regular field, four; and Silver Valley field, Coleman County, two.

NORTH CENTRAL TEXAS SUCCESSFUL WILDCAT

Young County: New oil pool—Robert G. Davis 1 Baldwin-Lockett, Sec. 207, TE&L Sur., 4 mi. S and 3 mi. E Olney, elev. 1,152 ft., flowed 476 bbl. day through 10/64-in. choke on 2-in. tubing, perf. 4,844-59 ft. Mississippian, gravity 44°, TD 4,865 ft.

NORTH CENTRAL TEXAS WILDCAT FAILURES

Archer County: L. T. Burns 1 A. D. Thompson, Lot 6, Blk. 21, ATNCL, 4 mi. S Holliday, dry, TD 4,400 ft.

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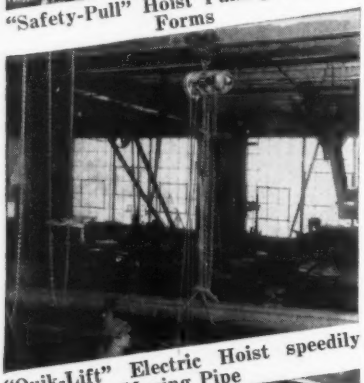

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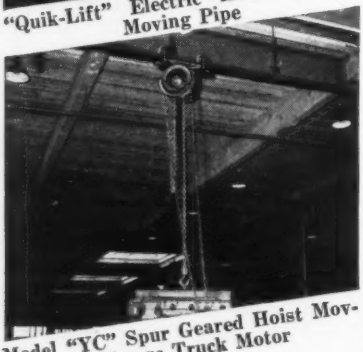

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Jack County: Ralph Harper 1 Elda Eatherly, J. T. Dawson Sur. A-1776, 2 mi. W and ½ mi. N Bryson, elev. 1,234 ft., Marble Falls 4,490 ft., dry, TD 4,507 ft.

Wichita County: Fortex Oil 1-A J. E. Roller Est., Sec. 3, CTRR Sur. A-50, 4 mi. S Burkburnett, dry, TD 1,426 ft.

R. G. Drlg. et al 1 I. H. Kemper, League 1, Blk. 32, Denton CSL Sur., 5 mi. S and W Wichita Falls, elev. 1,004 ft., Ellenburger 5,584 ft., dry, TD 5,708 ft.

Young County: Lehan Drlg. 1 F. R. Cotten, Sec. 3, SPRR Sur. A-266, 2 mi. W and 3 mi. N Eliasville, elev. 1,270 ft., Caddo 3,543 ft., dry, TD 3,546 ft.

WEST CENTRAL TEXAS SUCCESSFUL WILDCAT

Shackelford County: New oil pay—Phillips-Pan 1 Hickman-Neller, Sec. 16, LAL Sur., offset to Phillips 1 Pan-Ace, recent Ellenburger discovery, pumped 29 bbl. day through open 2-in. tubing, perf. 3,934-44 ft. Marble Falls, gravity 42.3°, gas-oil ratio 310 to 1, TD 4,313 ft.

WEST CENTRAL TEXAS WILDCAT FAILURES

Jones County: Mantex Oil Corp. 1 J. E. Manley, Sec. 72, Blk. 14, T&P Sur., 8 mi. E and slightly S Hawley, elev. 1,727 ft., Ellenburger 4,889 ft., dry in Strawn, TD 5,025 ft.

Transeal Drlg. Co. 1 Spraberry, Sec. 17, OAL Sur., 3¼ mi. NE Anson, elev. 1,622 ft., Hope 2,342 ft., dry, TD 2,641 ft.

M. M. Travis 2 George Reeves, Sec. 164, BBB&C Sur., 5¾ mi. NE Avoca, elev. 1,560 ft., dry, TD 1,988 ft.

Taylor County: Geo-Chemical Survey, Inc., et al 1 M. D. Teaff, Subd. 8, Wm. R. Willis Sur. No. 122, 4¾ mi. SE Merkel, elev. 1,801 ft., Canyon 3,100 ft., dry, TD 4,635 ft.

TEXAS GULF COAST

Wharton County Gets New Field

HOUSTON.—A new oil field for Wharton County has been brought in just south of gas production in the Lakeview field. It is Lakeview Oil Co. (J. F. Hutchins, deceased) 1 J. E. J. Johnston, Section 15, I&GN Survey. On a potential flow test, the well gaged 126 bbl. of 24.3° pipe-line oil through an ⅛-in. choke with 500 lb. flowing pressure on the tubing. Hole bottomed at 5,789 ft., and pipe was perforated with 48 shots from 4,514 to 26 ft. for completion. These same sands were tested in the Lakeview field, but failed to show for commercial production. Superior Drilling Co. drilled the test for Hutchins, who died July 3, this year, and had requested the field be named "Hutchins Oil Field."

Also in Wharton County, Navidad Oil Co. (Houston Drilling Co.) 1 Willis, Wallace, Hancock, outpost test in Section 14, Morris & Cummings Survey, tested gas on an initial try. Hole was drilled and cored to a total depth of 5,500 ft., and 5½-in. pipe was cemented to 5,269 ft. Perforations were effected from 5,234 to 39 ft. for the test which showed dry. Squeeze jobs have been made and another test is being made.

Two new fields for Matagorda County in the Blessing area were indicated as the week closed. Three miles southeast of Blessing townsite, Amerada Petroleum Co. et al 1 Ike Laughlin, Jno. Holmes Survey, perforated pipe at 8,834 to 47 ft., and a drill-stem test using ¼ and ⅜-in. chokes flowed at the rate of 146 bbl. of 45.2° oil daily. Pressures were steady, but gages were not recorded. Total depth of the hole is 11,513 ft. and 7-in. pipe is cemented to 10,105 lb.

Two miles northeast of Blessing, Ralph A. Johnston's 1 Live Oak Farms, wildcat test on the Mrs. Grace P. Heffelfinger property in the Josiah Tilley league, fished for part of the collapsed surface pipe after the well blew gas and condensate when a drill-stem test was attempted from open hole at 8,775 to 81 ft., total depth.

Production from under the Gulf of Mexico, off the southwest flank of High Island Dome, Galveston County, has been proven by Stanolind Oil & Gas Co.'s directional hole job, 1 State Land, Tract No. 2. The well flowed 25 bbl. of 37.8° oil in the first 4 hours of an initial production gage through 9/64-in. choke from perforations 6,432 to 34 ft. Flowing pressure was 790 lb. and gas ratio was 480 to 1. Total depth of the hole is 6,994 ft.

A third new sand for the north flank production on the Nash dome of Fort Bend County assured production in Danciger Oil & Refining Co. 3 Theodor Meier. On a drill-stem test from 5,885 to 5,900 ft., pipe filled with 43 bbl. of oil in 22 minutes with 1,600 lb. pressure. Tool was shut in for one minute, and it developed 1,925 lb. pressure. Hole was being cored ahead below 5,900 ft., still in saturated sands with no water evident.

Sun Oil Co. has completed its first well at Sugar Valley in Matagorda County. It is an oiler with a gage estimated at 175 bbl. daily through a 7/64-in. choke with 1,250 lb. flowing pressure on the tubing. Production is through 48 perforations at 8,980 to 92 ft. Total depth is 9,100 ft. where 5½-in. casing is cemented. The well is its 1-C D. H. Braman, north offset to production on the west side of the field, and is in the Amos Rawls Survey.

Pan American Production Co. 1 Callihan Unit, wildcat test in the Liverpool area of Brazoria County, just west of Chocolate Bayou field, Angier-Hall-Bradley Survey, Abstract 6, has plugged back to 11,611 ft. for series of production tests. It is expected to open a new field in sands being protected behind 7-in. pipe set to 11,615 ft. Hole was drilled to a total depth of 12,204 ft.

There was a total of six new locations in the Upper Gulf Coast of Texas in the past week, one of which was a wildcat

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test in the Bon Wier area of Newton County. One new oil field completion was recorded with three wildcat dry holes. Seven oilers, one gasser and five dry holes were the results from proven fields in the district.

TEXAS GULF COAST SUCCESSFUL WILDCAT

Wharton County: Oil field discovery, Hutchins field—Lake View Oil Co. 1 J. E. J. Johnston, 1 mile south of Lakeview gas field, I&GN Survey, Sec. 22, Abstract 240, TD 5,789 ft., top pay 4,515 ft., perf. 48 holes 4,514 to 46 ft., PT 126 bbl. per day 1/8-in. choke, TP 500 lb. csg. sld., gas-oil ratio 432 to 1, 24.3°, no water.

TEXAS GULF COAST WILDCAT FAILURES

Chambers County: Kenneth D. Owens 1 W. L. Moody, Jr., 1½ miles east-southeast of South Mayes field, G. W. Shelton Survey, TD 10,020 ft., no shows, dry.

Fort Bend County: Goldrus Drilling Co. 1 John Kostelnik, 1 mile southwest of needville townsite and 1½ miles north of Needville field, TD 6,396 ft., dry.

Big Creek flank wildcat; Jack W. Frazier and Cecil Hagen 1 C. H. Chernosky, 1 mile south of Big Creek production, Barnabus Wickson Survey, Abst. 95, dry, TD 7,225 ft.

ILLINOIS

Field and Wildcat Completions Increase

MATTOON.—Completions were running high last week in Illinois when 33 oil wells were finished, along with 21 dry holes, for a total of 54. One wildcat in Richland County completed as a small oil well. There were 28 permits issued for new wells last week. Coles, Hamilton and Wabash counties had 4 each; Richland and White counties 3 each. Clay, Jefferson, and Wayne counties 2 each, and 1 new well each for Gallatin, Madison, Marion and Washington counties.

S.H.& K.'s wildcat in Cole County, 1 Strong, SE SE SE 22-12n-7e, was drilling ahead at 3,028 ft. after receiving show of oil on drill-stem test at 2,920-44 ft. The well cored the Carper sand at 2,927-44 ft., receiving 14 ft. of hard, tight, saturated sand.

In Marion County, A. J. Slagter 1 Branch, SW NW SE 4-2n-2e, recovered 45 ft. of oil-cut mud on a drill-stem test in the Benoist at 1,953-94 ft. Total depth is 2,172 ft., in the McClosky topped at 2,125 ft.

In Washington County, National Consumers' 1 Koelling-Pitchford, NW SW SE 10-2s-1w, set 7-in. casing at 1,520 ft. to test the Cypress after swabbing 3 bbl. of oil in 1 hour.

ILLINOIS SUCCESSFUL WILDCAT

Richland County S. Vanetis et al 1 American National Bank, NW NE SW 23-3n-11e, pumped 18 bbl. in 24 hours, McClosky 1,886-90 ft., 1,896-1,900 ft., TD 1,942 ft.

ILLINOIS WILDCAT FAILURES

Christian County J. W. Myers 1 Johnston, SW SW SE 16-12n-2w, dry, TD 2,346 ft., Aux Vases 1,100 ft., Ste. Genevieve 1,162 ft., Devonian 2,291 ft.

Clay County: T. B. Dirickson 1 Cassidy, SE SW SE 5-2n-7e, dry, TD 3,163 ft., Fredonia 3,063 ft., McClosky 3,072 ft.

Cumberland County: R. E. Brown et al 1 Easton, SW SE SE 24-9n-9e, dry, TD 2,613 ft., Barlow lime 2,204 ft., Cypress sand 2,231 ft., Ste. Genevieve 2,514 ft.

Effingham County: Joe Dunbar 1 Heitman, SW SW SW 27-6n-6e, dry, TD 2,769 ft., Barlow lime 2,384 ft., Cypress sand 2,438 ft., Benoist 2,548 ft., Aux Vases 2,610 ft., Ste. Genevieve 2,671 ft.

Edwards County: Hudson American Corp. 1 Ahlfield, NW SE NE 21-1n-10e, dry, TD 3,349 ft., Cypress sand 2,900 ft., Aux Vases 3,233 ft., Ste. Genevieve 3,266 ft., McClosky 3,333 ft.

Edgar County: National 1 Wilson, SE NW SW 4-13n-14w, dry, TD 1,181 ft., sand and show oil 378-97 ft.

Fayette County: Claude Neon Light Co. 1 Hassebrock, SE SW NW 23-5n-3e, dry, TD 2,352 ft., Cypress sand 1,995 ft., Benoist 2,074 ft., Aux Vases 2,156 ft., Ste. Genevieve 2,205 ft.

Franklin County: George & Weather 1 Burr Oak Coal Co., SE SW SW 33-6s-4e, dry, TD 3,183 ft., Cypress sand 2,743 ft., Weil 2,863 ft., Benoist 2,946 ft., Ste. Genevieve 3,041 ft., McClosky 3,133 ft.

Hamilton County: Olsen Drilling Co. 1 Bayer, NE NE SW 29-5s-7e, dry, TD 3,364 ft., Cypress sand 2,894 ft., Aux Vases 3,225 ft., McClosky 3,292 ft.

Lawrence County: George Engle 1 Buchanan, SW SW NE 16-2n-12w, dry, TD 2,254 ft., Cypress sand 1,986 ft., Benoist 2,035 ft., Aux Vases 2,146 ft., Ste. Genevieve 2,180 ft.

Earl Brown 1 Brown, NE SE NW 14-3n-13w, dry, TD 1,138 ft., sand 1,010 ft., 1,118 ft., with show of oil.

Marion County: Henson Drilling Co. 1 Warren, SW SE NW 24-3n-4e, dry, TD 2,818 ft., Benoist 2,541 ft., Aux Vases 2,628 ft., Ste. Genevieve 2,674 ft., McClosky 2,736 ft.

Richland County: Fleming & Swan 1 Reed, SE SE NE 27-3n-10e, dry, TD 3,003 ft., no tops available.

Shelby County: Joe Reznick et al 1 J. I. Walker, NE NE NE 14-10n-3e, dry, TD 1,961 ft., Aux Vases 1,808 ft., Ste. Genevieve 1,862 ft., McClosky 1,905 ft.

Washington County: Ben Taylor et al 1 Lamczek, NE NE NE 12-3s-2w, dry, TD 1,441 ft., Weil 1,298 ft., Benoist 1,407 ft.

OHIO, KENTUCKY

Newton Township Gets Good Oil Producer

COLUMBUS.—Atha Realty 3 H. H. Roberts, Sec. 23, Newton Township, Muskingum County, a north offset to the 2 Roberts, made 20 bbl. natural, and 80 bbl. with 250,000 cu. ft. gas in 21 hours after shot, from the Clinton at 3,370-3,415 ft., with the gas pay in top and the oil pay near the middle.

Benedum-Trees 2 Henry Franz, Lot 20, Mayfield Township, Cuyahoga County, along the southern edge of the Oriskany and Newburg gas pool, found 3,991,000 cu. ft. in the Newburg at 2,810-48 ft.

Ohio Fuel completed its second gas well in the newly opened pool in northeastern Penfield Township, Lorain County. The well, 2 Philip Bobl, Lot 48, found the upper Clinton sand at 2,547-56 ft., with a natural open flow of 4,370,000 cu. ft. and a rock pressure of 1,120 lb. A south offset to the well will be made.

Glen Harmon et al extended the gas pool in the north part of Jackson Township, Ashland County, ¾ mile southwest by completing 1 C. R. Rogers, Sec. 4, in the Clinton at 2,885-89 ft. for 987,000 cu. ft. natural, with a rock pressure of 690 lb.

Mt. Vernon field reported 6 locations for the week, followed by Cambridge, Brush Creek, and Ashland with 3 each, and Lancaster with 1. Of the 28 completions, 9 were in the Ashland field and 4 in Brush Creek, Cambridge and Stewart.

EASTERN KENTUCKY

ASHLAND.—Kentucky-West Virginia Gas Co. monopolized the completion list this week, with 6 gas wells, 2 each in Martin and Pike counties, 1 each in Johnson and Knott counties.

No. 5656 Carlisle Lands, Martin County, made 582,000 cu. ft. from shale after shot. No. 5669 Carlisle Lands, same county, a shallow producer, was good for 1,309,000 cu. ft. from the Salt sand at 563 ft.

No. 5616 on the Leonard Branham property, Pike County, total depth 3,712 ft., was good for 133,000 cu. ft. from the shale after shooting. No. 5649, same county, on the George W. Elswick property, had an open flow of 3,130,000 cu. ft. in the Maxon, total depth 1,723 ft.

No. 5658 on the John Richmond farm, Johnson County, made 190,000 cu. ft. from the shale after shot, and 30,000 cu. ft. from the Corniferous lime, total depth 2,804 ft. No. 5653 on the John M. Gibson farm, Knott County, made 223,000 cu. ft. from the shale, after shooting, total depth 3,135 ft.

WESTERN KENTUCKY

OWENSBORO. — The Burbank - Chapel field in Henderson County is getting a

southwest extension as Sinclair-Prairie Oil Co. 8 Humphrey, 6-P-21, set pipe after an 18-minute drill-stem test in the Lower O'Hara lime at 2,547-65 ft., showed gas in 2 minutes and recovered 2,530 ft. of clean oil, with no water.

C. Wood et al is rigging up for a 2,400-ft. McClosky wildcat test at 2 Cooksy Crafton in 16-Q-25, 5 miles east of Henderson. R. Bartmes 1 Jennie Duncan is a new wildcat location in 17-N-23, Webster County. Sinclair-Prairie announced location for a wildcat 1 McDonald in 12-P-20, Union County. In Muhlenberg County, Texas Co. 1 Rogers Coal Co., a cable tool wildcat, is drilling at 1,500 ft.

INDIANA

EVANSVILLE.—Sklar Oil Co. 3 Alice Stewart, Lot 16, 22-1n-9w, about 5 miles west of Petersburg, elevation 459 ft., was completed as the first commercial gas well in this area from the Cunningham sand (Aux Vases) at 1,480-87 ft., estimated good for better than 1,000,000 cu. ft. Nine new permits were announced this week, four in Gibson county, three in Posey, and one each in Jay, Pike, and Spencer counties.

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KANSAS

Stanolind to Test Extent Of Hugoton at Five Wells

STANOLIND OIL & GAS CO. announced five new locations for gas wells in the Hugoton field, all of which are edge wells and are part of a drilling program to determine the extent of Stanolind's gas supply in the field. Three of the wells are in Finney County, one in Hamilton County, and one in Seward County.

Stanolind now is reported to have 17 tests in operation in the area and plans on drilling 80 to 100 new wells during the current fiscal year to establish reserves for feeding a proposed gas conversion plant to be installed in the Hugoton area. Location of the plant has not yet been determined.

In Ford County, southwestern Kansas, R. G. Clay has started a lease program centering on the old Pleasant Valley one-well gas pool 10 miles east of Ford. Leases include some 6,200 acres in Sections 27, 33, 34 and 35-27s-21w; Sections 2, 3, 4, 5, 8, 9, 10 and 11 of 28s-21w; joining the south end of a Continental Oil Co. block and including leases offsetting Sinclair Prairie Oil Co.'s gas well in 34-27s-21w, which was completed in 1938 for 4,400,000 cu. ft. of gas a day from Mississippian lime topped at 4,890 ft. The Sinclair well found the Viola at 5,350 ft., Wilcox sand at 5,617 ft., and originally tested some 40 bbl. of oil per day, plus considerable salt water, in the Mississippi lime. Sinclair surrendered all acreage except its 160-acre well-site lease and the area has remained inactive until now.

KANSAS SUCCESSFUL WILDCATS

Ellis County: W. N. Bartlett et al 1 Engel, NE NE SE 21-15s-18w, pumped 248 bbl. oil per day, 32° gravity, from Arbuckle at 3,570-74 ft., TD 3,574 ft.

KANSAS WILDCAT FAILURES

Barber County: Drillers Gas and J. M. Huber Corp. 1 H. W. Skinner, C E½ NE NE 27-31s-14w, dry, TD 4,755 ft., Heebner 3,680 ft., Lansing-Kansas City 3,874 ft., Maquoketa 4,511 ft., Simpson 4,635 ft., Arbuckle 4,728 ft.

Barton County: Magnolia Petroleum Co. 1 Putnam Estate, NW NW SE 17-17s-13w, dry, TD 3,462 ft., Lansing-Kansas City 3,212 ft., conglomerate 3,430 ft., Arbuckle 3,444 ft. with a slight stain of oil.

Ohio Oil Co. 1 Porter, C SE SW 3-17s-15w, dry, TD 3,615 ft., Lansing-Kansas City 3,303 ft., Marmaton 3,482 ft., conglomerate 3,540 ft., Arbuckle 3,585 ft.

Ellis County: Fred M. Manning 1 Dreiling, NW NW SW 21-14s-16w, dry, TD 3,452 ft., Topeka 2,850 ft., Lansing-Kansas City 3,127 ft., conglomerate 3,386 ft., Arbuckle 3,400 ft.

Graham County: Potash Co. of America 1 Johnson, NW SE NE 7-6s-24w, dry, TD 4,190 ft., Topeka 3,451 ft., Lansing-Kansas City 3,652 ft., basal Kansas City 3,852 ft., Marmaton chert 4,069 ft., Arbuckle 4,152 ft.

Rooks County: Sohio Petroleum and Rine Drilling 1 Risely, SW SW SW 2-7s-19w, dry, TD 3,600 ft., Lansing-Kansas City 3,206 ft., conglomerate 3,508 ft., Arbuckle 3,544 ft.

E. M. Swearer et al 1 Haskins, SW SW SW 34-9s-16w, dry, TD 3,575 ft., Lansing-Kansas City 3,176 ft., with stain of oil at 3,239-43 ft. and show of oil at 3,284-89 ft., basal Kansas City 3,416 ft., conglomerate 3,497 ft., Arbuckle 3,560 ft.

Rush County: M. A. Isern 1 Dyer, SW SW SE 1-19s-16w, dry, TD 3,649 ft., Topeka 3,008 ft., Heebner 3,251 ft., Lansing-Kansas City 3,311 ft., conglomerate 3,605 ft., Arbuckle 3,622 ft., dolomitic sand 3,625 ft. with a stain of oil, La Motte sand 3,635 ft.

Stafford County: H. A. Hershfield et al 1 Shirk, SE SE NE 35-24s-14w, dry, TD 4,274 ft., Lansing-Kansas City 3,630 ft., Mississippi lime 3,970 ft., Kinderhook 3,985 ft., Viola 4,088 ft., Simpson 4,187 ft., Arbuckle 4,239 ft.

Sumner County: Texas Co. 1 Etchison, SW SE SW 8-32s-1w, dry, TD 4,236 ft., Lansing-Kansas City 3,087 ft., Mississippi lime 3,718 ft., Kinderhook 4,046 ft., Simpson 4,116 ft., Arbuckle 4,201 ft.

LA.-ARK.

Deep Well Record Set In North Louisiana

SHREVEPORT.—Barnsdall Oil Co.'s 1 Carter-Burton Unit, in 23-26n-13w, north of Plain Dealing, Bossier Parish, late this week had passed the previous deep-well depth of 12,000 ft. set by H. L. Hunt in LaSalle Parish.

The Carter-Burton test, on last report, was believed to be in the lower Cotton Valley series, and was drilling ahead below 12,308 ft. Goal is the Smackover lime.

In Arkansas, proposals were made to the oil and gas commission requesting authority to continue experimental work in water injection and water flooding in the Haynesville extension field, with the understanding that an order on such a program would be made if the experiments prove successful. Testimony presented indicated the ultimate recovery would be increased by 23,-

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000,000 bbl. The other proposal was from McAlester Fuel Oil Co., which plans to install a pressure maintenance plant in the Wesson field of Ouachita County.

ARKANSAS WILDCAT FAILURE

Ouachita County: Lion Chemical Co. 1 Wesson, SW SE NW 4-15s-19w, dry, TD 2,405 ft., Bucrange 1,998 ft., Tokio 2,268 ft., Glen Rose 2,371 ft.

NORTH LOUISIANA WILDCAT FAILURES

Avoyelles Parish: Avoyelles Petroleum Co. 1 R. E. Bordelon, irregular Section 56-2n-4e, dry, TD 9,012 ft., Sparta sand 4,518 ft. with odor of oil, Cane River 5,118 ft., Wilcox 5,542 ft., Wilcox sand 7,939-49 ft. with slight odor of oil.

Claiborne Parish: Placid-Union Producing Co. 1 Owens-Odom Unit, C NE NW 21-23n-6w, dry, TD 5,715 ft., Blossom sand 4,481 ft., James 4,736-4,867 ft., Upper Pettus 5,212-18 ft., Lower Pettus 5,234-38 ft., Travis Peak 5,311 ft.

Red River Parish: M. T. Halbouty 1 Franklin Realty Co., SW SE SW 24-11n-10w, dry, TD 1,258 ft., no tops reported.

Richland Parish: Lion Oil Refining Co. 1 C. D. Williams, C SW SE 8-14n-5e, dry, TD 4,525 ft., chalk 3,300 ft.

ROCKY MOUNTAIN

Water Shut Off in New Rangely Shallow Pay

DENVER.—Continental Oil Co. 2 Rooth, SW SW 15-2n-103w, discovery well in the Shinarump formation above the main Weber pay in the Rangely field came back flowing 32 bbl. an hour through a ½-in. choke after shutting off water from upper horizons, and running and perforating a liner. The well, an outpost on the west side of the field, last week was swabbed dry and then sulfur water made its appearance in the hole. There were fears in some quarters that the discovery had struck a pocket and the first optimism over the opening of a new pay quieted down.

The operator believed the water was coming from an upper sand, and cemented around the casing shoe. Then a 7-in. liner was run from the base of the 9⅝-in. at 5,966 ft. to bottom at 6,110 ft., and perforated at 6,060-70 and 6,095-6,110 ft. It was circulated with water and then swabbed down to 800 ft. when it began flowing. It is cleaning up nicely and gradually building up more pressure. It will be tested for a few days before deciding whether to complete at present depth or continue on to the Weber sand. Continental has released two Weber sand locations in the same area, 3 Rooth, NE NE 27-2n-103w, 1½ miles southeast of 2 Rooth, and 4 Rooth, NW NW 22-2n-103w, a south offset to the discovery.

Dakota extension in Big Muddy.—Dakota sand production in the Big Muddy field, Converse County, Wyoming, was extended a mile to the east in Dyer & Rice 1 Barber, NW SE 3-33n-76w. It was drilled into the Lakota at a total depth of 4,459 ft., and had a show of oil, but was completed in the lower Dakota through perforations at 4,383-98 ft., and bailed 1½ bbl. per hour of pipe-line oil. It is estimated at 50 bbl. per day.

Big Muddy, discovered in 1916, produced over 29,000,000 bbl. of crude to the end of 1945, most of which came from the Wall Creek sand. In the early days the Dakota-Lakota horizon was not regarded with favor on account of heavy water pressure entering the sands at the outcrops in the mountains to the west.

With advances made since then in drilling practices, however, such as the use of electric logs in locating the pay and perforating casing opposite the oil zones, the difficulties have been largely overcome. Continental Oil Co. has been successful in developing production in the lower pays and now has 18 producing wells in the Dakota-Lakota sands making from 1,500 to 1,600 bbl. per day. Production is now uniform throughout the field due to faulting, and while some of the wells are small, others have made unusual records. One well has produced more than 1,000,000 bbl. of oil, every barrel of which was pumped.

Boundary Butte lease sale.—A lease play in southeastern Utah, which has been under way quietly for some time, has received considerable impetus from the discovery of oil in the Shinarump formation of Triassic age in Continental Oil Co. 2 Rooth in the Rangely field. While the formation is known to extend over a vast area down into Arizona and northwestern New Mexico, it has not been tested sufficiently to give an accurate idea of the sand conditions. One exception is on the Boundary Butte structure in San Juan County, Utah, where Continental Oil Co. and Midwest Exploration Co. drilled a well in NW NW 22-43s-22e, in 1928. It found a good porous sand in the Shinarump and at 1,590 ft. it was estimated good for 25 bbl. per day.

Wildcat has shows in Devonian.—A discovery in the Devonian formation in northern Montana appears imminent in Texas Co. 2 Nick Lass, NW NE SW 14-33n-4e, East Utopia district, in Liberty County, with surface elevation of 3,422 ft. It had the top of the Devonian at 3,329 ft., anhy-

(Continued on page 133)

OKLAHOMA

Grady County Test Gets Water in Wilcox

GEORGE L. LIVERMORE, INC.,'s Anadarko basin wildcat, the 1 Giles Ranch, NW NW 35-8n-5w, about midway between Blanchard and Middleburg, in Grady County, reported water in the second Wilcox at total depth of 12,253 ft. However, several good shows were found in sands at higher levels and operators will retest the Hunton lime after running another electric log.

Electric log tops were Deese sand at 9,440-50 ft., showing saturation, and a drill-stem test at 9,937-63 ft., recovered oil and gas-cut mud. A sand at 10,195 ft. showed some oil and gas and 180 ft. of clean oil was reported in a drill-stem test at 10,186-10,212 ft. Hunton lime was topped at 10,816 ft., with other limestone sections at 11,840-59 ft. First Wilcox was at 11,070 ft., and a drill-stem test at 11,980-12,110 ft. recovered some 400 ft. of mud, showing oil and gas. However, another test at 11,961-12,164 ft. showed 630 ft. of gas-cut mud.

New Wilcox production.—Opening of a new pool, or a possible second pay zone underlying Hunton production of the Wilzetta area of Lincoln County, was in prospect last week. A south outpost to the field, Danciger Oil & Refining Co.'s 1 Pantlik, NW NE SE 15-12n-5e, filled up at the rate of 100 bbl. of oil an hour after a drill-stem test in the Wilcox at 4,515-45 ft. showed 150,000 cu. ft. of gas and a recovery of 3,660 ft. of 30° gravity oil. Earlier, the well was estimated at good for 100 bbl. of oil a day in the Hunton, where a drill-stem test at 4,340-50 ft. recovered 60 ft. of black oil and 150 ft. of oil and gas-cut mud. Operators were setting casing for production tests.

On the west flank of Wilzetta, Sam King's 4 Earlabaugh, NE SE NE 34-13n-5e, was showing good staining to saturation in Wilcox topped at 4,500 ft. Results of a drill-stem test at this depth were not available as the week ended.

OKLAHOMA SUCCESSFUL WILDCAT

Seminole County: Cities Service Oil Co. 1-A A. Livingston, C NE NW 15-8n-6e, pumped 12 bbl. oil per day from Earlsboro at 2,951-73 ft., broken sand 2,120-28 ft. with show of oil, Calvin 2,240-60 ft., brown lime 3,145 ft., Booch 3,200 ft. with slight show of oil, Mayes 3,520 ft., Woodford 3,595 ft., Sylvan 3,730 ft., Viola 3,810 ft., dolomite 3,853 ft., second Wilcox 3,990-4,160 ft., sand 4,203 ft., Arbuckle 4,650 ft., TD 4,880 ft.

OKLAHOMA WILDCAT FAILURES

Creek County: Davis Brothers 1 Whitehead, NE NE SW 18-18n-8e, dry, TD 3,100 ft., Layton 1,530-40 ft., sand 1,565-95 and 1,605-20 ft., Oswego 2,295-2,381 ft., Prue 2,380 ft., Viola 2,465-70 ft., Red Fork 2,716-68 ft., Bartlesville 2,892-2,940 ft.

Garvin County: Mid-Continent Petroleum Corp. 1 Hart, SE SE SE 23-3n-3w, dry, TD 7,179 ft., second Checkerboard 6,560 ft., third Deese 7,054-65 ft.

Hughes County: Edward A. Schmitt 1 Cox, NW NE SW 16-9n-9e, dry, TD 2,754 ft., brown lime 2,555 ft., Booch 2,727 ft.

Lincoln County: Deep Rock Oil Corp. et al 1 Creekmore Comm., SW SW NE 25-14n-5e, dry, TD 3,588 ft., Cherokee 2,582 ft., Cleveland 2,610 ft., Oswego 3,451 ft., Prue 3,530 ft., Verdigras 3,578 ft.

Irvin Millner 1 Williams, NE SW NW 35-12n-6e, dry, TD 4,734 ft., Oswego 3,026 ft., Prue 3,078 ft., Verdigris 3,255 ft., Inola 3,640 ft., Bartlesville 3,649-54 ft., brown lime 3,785 ft., Woodford 4,326 ft., Misener 4,358 ft., Hunton 4,359 ft., Sylvan 4,490 ft., Viola 4,580 ft., second Wilcox 4,706 ft.

Warren Bradshaw and W. J. Martin 1 R. E. Bailey, NE NE NW 35-14n-2e, dry, TD 5,443 ft., Pawhuska 1,535 ft., Avant 2,882 ft., Layton lime 3,515 ft., Layton sand 3,545 ft., Cherokee 3,749 ft., Cleveland 3,765 ft., Oswego 4,437 ft., Prue 4,482 ft., Verdigris 4,542 ft., Red Fork 4,758 ft. with a slight show of oil, Mayes 4,990 ft., Woodford 5,080 ft., Hunton 5,125 ft., Sylvan 5,195 ft., Viola 5,280 ft., dolomite 5,335 ft., second Wilcox 5,424 ft.

Love County: Samedan 1 Chesser, NE NW SE 18-6s-2e, dry, TD 3,228 ft., broken said 2,520-80 ft. with a slight stain of oil, sand 2,622-31 ft., Arbuckle 3,170 ft.

McClain County: Carter Oil Co. 1 Fannie Bingham, C SE SW 3-7n-3w, dry, TD 10,689 ft., Oread 5,525 ft., Tonkawa 5,760

(Continued on page 142)

MISSISSIPPI

Permit Issued for Deep Test in Adams County

JACKSON.—A permit for a new deep oil test in the Cranfield field, Section 29-7n-41w, Adams County, has been issued to the California Co.

Roeser & Pendleton's wildcat test, the 1 Columbus Lumber Co., 20-6n-6e, Lincoln County, is drilling below 9,533 ft., and in the same county, California Co. 1 Mary Parnell-McDaniel, 17-6n-8e, cored 17 ft. of saturated sand from Lower Tuscaloosa at 10,417-34 ft. after first shows of oil in a broken section 10,365-85 ft. and is coring ahead below 10,464 ft.

In Wayne County, Humble Oil & Refining Co. 1 E. L. West, 18-9n-7w, is coring below 5,060 ft., having reported oil shows at 4,950 ft. from a tight shaly section in Eutaw sand.

Field drilling activity this week includes: Roeser & Pendleton 1 Ballard, 17-7n-7e. Brookhaven field in Lincoln County, drilling at 4,485 ft.; in the same field, California Co. 1 W. L. Case, 9-7n-7e, coring below 10,370 ft.; Humble Oil & Refining Co. 4 E. A. Ball, 20-2n-14e, Hub field in Marion County, drilling below 7,500 ft.

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Among the Drilling Contractors

Penrod Drilling Co. has the contract for Hunt Oil Co.'s 1 First National Bank of Tenaha. Location is the George Humphries survey of the Carthage field, Panola County, East Texas.

G. R. Hayes and **H. W. Kaehey,** who operate the Hayes Drilling Co., have moved their offices to Mt. Carmel, Ill.

Tex-Mo Drilling Co. has started a second wildcat well in the area northeast of Zavalla in Angelina County, Texas. The well, 1 Long Bell, HT&S Survey, set surface pipe at 243 ft. Contract is for 5,000 ft.

Kingery Brothers Drilling Co. has started drilling at its 3 Pea-Wife-Ah, SE SE SE 1-4s-11w, in the South Walters area of Cotton County, southern Oklahoma.

Roger Lacy, Longview, Tex., was reported to have purchased a 9,000-acre citrus ranch north of Mercedes, in Hidalgo County, Southwest Texas, with intentions of drilling a 12,000-ft. test. The land was purchased from the American Rio Grande Land & Trust Co. at a cost of $400,000.

Helmerich & Payne, Inc., Tulsa, have contract for a wildcat about 7 miles northwest of Delhi Townsite, Richland Parish, Northern Louisiana. The test, Homer Hurley 1 Franklin, in NW NW 21-18n-9e, is on a farmout from the Texas Pacific Coal & Oil Co., owners of 2,300 acres around the site.

Olson Drilling Co. has a contract for a wildcat on the Freezeout structure in Baca and Bent counties, southeastern Colorado, on a 126,000-acre block owned jointly by the Sharples Corp., Frontier Refining Co., and the J. M. Huber Corp.

Pike Drilling Co., Long Beach, Calif., is drilling three wildcat tests, two being for the accounts of L. M. Lockhart at a location 10 miles northwest of the Ventura Avenue field, Ventura County, and for Basin Oil Co., within the city limits of Inglewood. The third wildcat operation is 2 miles north of the recently completed discovery well at Talbert on the Anaheim Sugar fee. The contracting company is in process of completing and recompleting three wells on Terminal Island, Wilmington district, for Royalty Service Corp., Termo Oil Co., and Bankline Oil Co.

Lohman-Johnson Drilling Co., Evansville, Ind., have contract for Clarence Wood's 4 J. H. Spore, SW NE 19-2s-11w, in Gibson County, Indiana. Contract depth is 2,350 ft.

Harry L. McNabb, Wabash, Ind., will drill Rich Valley Development Co., Inc.'s 1 Mark Horner, NW SE 3-27n-5e, Miami County, Indiana.

Smith Brothers Drilling Co. has staked location for the 1 Domeny in SE NE SW 20-24n-3e, in the extreme northeastern part of Noble County, Oklahoma, and within a bend of the Arkansas River. Location is about midway between the Big Bend pool in Osage County and the East Watchorn pool in Pawnee County.

Rine Drilling Co. is underway at Sohio Petroleum Co.'s wildcat in Trego County, Kansas. Location of the test is 5½ miles east and 1 mile north of the recently discovered Hille pool, and 4½ miles east of a test being drilled by Republic Producing

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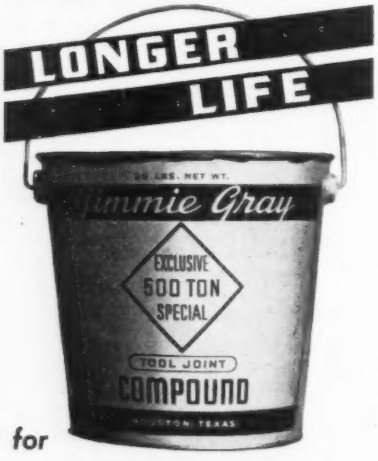

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Co. Sohio has a checkerboard block of approximately 2,200 acres and Superior Oil Co. and Lion Oil Refining Co. have close-in acreage and are supporting the test.

Rocky Mountain Area

(Continued from page 131)

drite at 3,421 ft., the Jefferson dolomite at 3,559 ft., and is drilling ahead at 3,732 ft. Excellent porosity was picked up at 3,562-72 ft. A core then was taken at 3,576-91 ft. with a recovery of 9½ ft. of broken dolomite with varying amounts of gypsum, showing spotted porosity with fairly live brown oil. A drill-stem test at 3,563-91 ft., tools open 25 minutes, resulted in the recovery of sweet gas at the estimated rate of 20,000,000 cu. ft. per day. The shut-in pressure was 1,400 psi.

Madison test in South Cut Bank.—Castle-Pardee 4 Tribal, NW NW NE 13-32n-6w, 21 miles south of the Madison lime wells in the northern part of the field, which had a show of oil in the top of the Madison at 3,191 ft., failed to take the acid and was drilled deeper. It then ran into sulfur water at 3,227 ft. and is fishing.

New operations.—Twenty-seven new operations were reported, of which 9 were in Colorado, 5 in Wyoming, 11 in Montana, and 2 in northwest New Mexico. Four were wildcats and 23 were development wells. Seven of the Colorado operations were in the Rangely field. One of the two Colorado wildcats is Sharples-Huber, Frontier 1 Jim Murray, SW SW SE 26-29s-50w, on the Freezeout structure in Baca and Bent counties in southeastern Colorado. The other is T. R. Wagner 1 Marquad, SW SE 6-8n-59w, in Weld County, east of the Greasewood pool, a 6,500-ft. Dakota test.

The Wyoming locations include 2 by Argo Oil Corp. at Hamilton Dome; one each at La Barge and Little Buffalo Basin, and a wildcat on the Castle Creek structure 30 miles northwest of Casper and 12 miles southwest of the Salt Creek field.

Montana locations include 4 in Kevin-Sunburst, 2 each in Bowdoin and Cat Creek, one each in Cedar Creek and Cut Bank, and a wildcat on the Harlo Dome in Colden Valley County in Mon-O-Co. 1 Unit, NW NW 19-7n-19e. The two New Mexico operations are in the Fulcher Basin gas field.

Completions.—Fourteen wells were completed, 8 oil, 2 gas, and 4 dry. These were distributed, 3 in Colorado, 2 oil in Rangely and one dry hole, wildcat; Wyoming, 3, of which 2 were oil wells and one a dry hole; Montana, 7 completions, 4 oil, 2 gas, and 1 dry hole; Northwest New Mexico, 1 dry hole.

COLORADO WILDCAT FAILURES

Eads, Kiowa County: Union Oil Co. 1 Union Pacific, SE SE SE 17-17s-48w, TD 5,760 ft. abd. approximately 50 ft. above the granite; Permian, 1,880; Pennsylvanian, 3,300; Shawnee group, 3,742; Kansas City-Lansing, 3,880; Cherokee, 4,378 ft.

WYOMING SUCCESSFUL WILDCAT

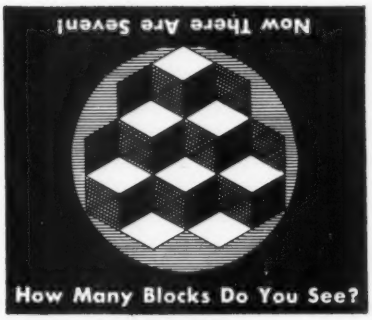
Big Muddy, Converse County: Dyer & Rice 1 Barber, NW SE 3-33n-76w, TD 4,459 ft., 5½-in. at 4,453 ft., bailed 1½ bbl. per hour from lower Dakota through perf. at 4,383-98 ft., est. 50 bbl. per day. Upper Dakota bailed dry, Lakota had show of oil with water. Big Muddy field extension in Lakota pay.

WYOMING WILDCAT FAILURE

Hat Six, Natrona County: Yellowstone Drilling Co. 1 State, SE SE NW 16-32n-77w, TD 521 ft., top of Shannon 335 ft., dry.

MONTANA SUCCESSFUL WILDCAT

West Kevin (Kevin-Sunburst), Toole County: Big West Oil Co. 1 Dahlquist, C SE 7-34n-4w, TD 2,147 ft., 7-in. 2,067 ft., 6,-170,000 cu. ft. of gas, 630 psi. from lower Cut Bank, top 2,073 ft.



That's right, six—but turn the page upside down and look again.

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PERSONALS

Corless Moves Up To Coordinator Post In New York

FROM working on loan assisting the executive development program of Standard Oil Co. (N. J.), last year to the position of coordinator of the program is a step taken by George B. Corless, who for the past 15 years has been Gulf Coast Division superintendent in the production department of Humble Oil & Refining Co., Houston.

Corless' resignation from Humble to assume his new duties in New York was announced this week. Corless first came to Houston in 1926 after several years as consulting engineer in geologic and mining work in Oklahoma and Missouri. He was employed by Humble as an assistant engineer in the construction of the Ingleside-McCamey pipe line and at the completion of the job was transferred to the production department, with which he was associated for the next 14 years.

Corless rose rapidly, becoming in succession, a salt-water specialist, division civil engineer, division petroleum engineer, and in 1929, Gulf Coast petroleum engineer.

Corless is a native of Silverwood, Mich., and a graduate of the University of Michigan, from which he obtained B.A. and M.A. degrees in engineering and geology.

LeRoy M. Edwards, vice president and general manager, Pacific Lighting Corp., has been selected by the general nominating committee as president of the Pacific Coast Gas Association. Others whose names will be offered by the committee at the association's fifty-third annual convention September 10-12 in San Francisco include: directors, 2-year terms, **R. R. Blackburn,** secretary, Southern California Gas Co.; **N. Henry Gellert,** president, Seattle Gas Co..; **C. H. Gueffroy,** vice president, Portland Gas & Coke Co.; and **J. S. Moulton,** executive engineer, Pacific Gas & Electric Co.

K. P. Huffman, engineer with Sohio Petroleum Co., has moved from Davis, Okla., to Edmond, Okla.

L. P. Maier, president of International Petroleum Co., Ltd., has been in Bogota, and plans to visit Ecuador and Peru before returning to his headquarters in Toronto, Ont.

J. L. Smith, engineer with Continental Pipe Line Co., has been moved from Oklahoma City to Shawnee, Okla.

Sidney Latham, Texas' representative on the Interstate Oil Compact Commission, has been appointed chairman of the resolutions committee for the August 8-10 commission meeting at Grand Rapids, Mich.

C. OSBORN

Campbell Osborn, former executive officer of the chemicals division of the War Production Board, will leave August 1 for Tokyo to take charge of the chemical and petroleum industries of Japan under General MacArthur. He was formerly assistant to the president of what is now the Continental Oil Co.

T. Martin Aranguren, representative for Tecnica Industrial Petrolera, S.A., Buenos Aires, Argentina, is in the United States for an extended visit contacting manufacturers represented by T.I.P.S.A.

H. C. O. Clarke, who is succeeding **R. B. Kelly** as manager of the Illinois producing division of Pure Oil Co., has been elected director and new secretary of the Illinois Oil and Gas Association. **John D. Howie,** formerly associated with Carter Oil Co., has been employed an executive secretary of the association.

Willard S. Brinker, Cities Service Oil Co. geologist, has been transferred from Casper, Wyo., to Mount Pleasant, Mich., succeeding **Robert Gutru,** who is being transferred to Amarillo, Tex.

J. W. Flanagan, retired president of Andian National Corp., and a past board member of International Petroleum Co., Ltd., is now in New York City where he plans to live. Flanagan played a major role in the construction of the famed Andian pipe line. At one time he was a captain in the Cuban Army, and was later promoted to lieutenant-colonel.

Edward C. Sommer, Jr., has been named assistant safety supervisor of the Baltimore, Md., refinery of Standard Oil Co. of New Jersey. **Franklin H. Cummings** has been transferred from Stanolind Oil Development Co.'s Esso engineering department to succeed Sommer as safety engineer assisting **R. W. Black,** chief safety engineer for the company. Other changes in the Standard Oil of New Jersey organization include the appointment of **Joseph McChesney** as assistant office manager at the Pittsburgh Works of Standard Oil Co. of Pennsylvania following his separation from the Marine Corps; the promotion of **Joseph P. Curran** to employment manager of the Bayonne, N. J., refinery succeeding **George T. Culp,** who was transferred to Creole Petroleum Corp. in Venezuela; and the promotion of **Harry R. Clark** to training supervisor at Bayonne succeeding **J. Weldon Rohner,** who resigned.

O. N. MILLER

O. N. Miller has been appointed general manager of Standard Oil Co. of California's manufacturing department, in charge of the Richmond, El Segundo, and Bakersfield refineries. He succeeds **C. E. Finney, Jr.,** who became a vice president of the company in January. Miller joined Standard in 1934 after receiving his degree in chemical engineering at the University of Michigan. A few months ago, he was appointed assistant to the vice president in charge of manufacturing.

Rex McFall, geologist for Superior Oil Co., has returned to Midland, Tex., after 3 months in the Bahamas Islands.

Clarence V. Beaton, advisor to the British petroleum representative on special production and packed petroleum supplies, received a decoration in Washington last week by **Lord Inverchapel,** British ambassador.

Odell C. Olson, petroleum engineer of the Texas Railroad Commission, has been transferred from Midland to Abilene. **Fred Osborne** has been appointed supervisor for the commission's West-Central Texas District.

John R. Suman, executive vice president; **L. F. McCollum,** coordinator of production, and **G. H. Freyermuth,** director of public relations, Standard Oil Co. (N. J.), and **O. C. Schorp,** president of Carter Oil Co., are visiting Yellowstone Park after inspecting properties in the Rocky Mountain area.

W. S. S. Rodgers, chairman of the board, and **C. E. Olmsted,** vice president in charge of foreign operations, of The Texas Co., have been in Casper, Wyo., discussing plans for construction at the Casper refinery.

Raymond Lamb, engineer with the New Mexico Bureau of Mines and Mineral Resources, has been appointed a member of the Interstate Oil Compact's engineering committee.

Bert Persing Newton, vice president in charge of Gulf Oil Corp.'s foreign marketing operations, has been awarded the Order of Cruzerio do Sul, Comendador grade, by President Eurico Gasper Dutra, of the Brazilian Republic.

J. G. Campbell, who recently returned to Shell Oil Co., Inc., after service in the Navy, has been appointed head of the company's new economics and statistics department. Campbell joined Shell in 1941 after serving for 5 years as manager of the statistical department of Joseph Walker & Sons, investment firm. With Shell, he was assigned to statistical work in marketing and then held successive positions as secretary of the crude oil supply committee and employment representative for college graduates. The new department will keep informed of the economic factors affecting the company's business and will conduct both general and specific research in the field of economics for management's guidance.

S. F. Bowlby, former assistant production manager at Los Angeles for Shell Oil Co., Inc., last week was

E. D. CUMMING

S. F. BOWLBY

appointed vice president in charge of the company's operations directed from the Los Angeles office. Bowlby succeeds **E. D. Cumming** who has accepted an assignment of international importance at the Royal Dutch-Shell headquarters in London. Cumming, who served the Petroleum Administration for War as director of refining operations, has been with Shell for 23 years, starting as a fireman at Long Beach, Calif. Bowlby started with Shell as an assistant engineer in Texas 20 years ago and has worked through successive production engineering and management assignments to his present position.

D. W. SPURLOCK

D. W. Spurlock, an Army colonel who served as wartime assistant to **Gen. Howard L. Peckham,** director of the fuels and lubricants division, office of the quartermaster general, is slated to be discharged shortly and to return to work for the Standard Oil Co. of Louisiana. Spurlock also served with **Walter Pyron,** Army general who is now back with Gulf Oil Corp. and stationed in London. Spurlock recently was awarded the Legion of Merit.

R. W. Phillips, Texas-Empire Pipe Line Co., has been moved to Tulsa as assistant chief engineer from Midland, Tex., where he was assistant supervisor.

John Ward, petroleum engineer, resigned his position with the Texas Railroad Commission at Midland, effective July 15, to join Goldsmith Pool Engineering Committee as field engineer. He recently returned from service in the Navy.

Ernesto R. Peters, petroleum engineer for Yacimientos Petroliferos Fiscales Argentinos (Argentine Government Oil Fields), who recently represented YPF in London, has been transferred to the New York purchasing office.

Shifts—

L. A. Tarbet, geologist, Standard Oil Co. of California, Bakersfield, Calif., to San Gabriel, Calif.; **Arthur K. Tomita,** engineer, Refinery Engineering Co., Chicago to New York; **G. E. Schultis,** foreman, Carter Oil Co., Farson, Wyo., to Creole Petroleum Co., Caracas, Venezuela; **F. D. Rowlett,** superintendent, Mohawk Drilling Co., Oklahoma City to Chickasha, Okla.; **W. H. Hawkes,** superintendent Stanolind Oil & Gas Co., Tulsa, to Oklahoma City; **R. B. Travis,** geologist, Standard Oil Co. of California, Forestville, Calif., to Bakersfield, Calif.; **K. D. Phelps,** geologist, Stanolind Oil & Gas Co., Liberty, Tex., to Bay City, Tex.; **Clifford H. Overly,** superintendent, Stanolind Oil & Gas Co., Liberty, Tex., to Bay City, Tex.; **C. B. Simmons,** geologist, Continental Oil Co., Haskell, Tex., to Toyahvale, Tex.; **F. A. Nelson,** foreman, Phillips Petroleum Co., Goldsmith, Tex., to Midland, Tex.; **Eugene M. Knight,** engineer, Stanolind Oil & Gas Co., Levelland, Tex., to Pampa, Tex.; **W. H. Greer,** superintendent, Humble Oil & Refining Co., Holliday, Tex., to Vernon, Tex.; **W. T. Lyford,** engineer, Southwestern Public Service Co., Seagraves, Tex., to Lubbock, Tex.; **W. F. Daniels,** engineer, Humble Oil & Refining Co., Beaumont, Tex., to Conroe, Tex.; **R. D. Stottlemyer,** engineer, Gulf Oil Corp., Monahans, Tex,. to Burgettstown, Pa.; **E. L. Mount,** geologist, Continental Oil Co., Odessa, Tex., to Snyder, Tex.; **Leo E. Swick,** geologist, Magnolia Petroleum Co., Wichita Falls, Tex., to Gainesville, Tex.; **P. J. Griffith,** manager, Arkansas Power & Light Co., Little Rock, Ark., to Pine Bluff, Ark.; **Earle McIlroy,** superintendent, Loudon Pipe Line Co., Beecher City, Ill., to St. Elmo, Ill.; **Harold B. Smith,** superintendent, Crudoil Drilling & Exploration Co., Hoyleston, Ill., to Tulsa; **R. B. Kelly,** manager, Pure Oil Co., Olney, Ill., to Fort Worth; **D. C. Isted,** engineer, Shell Oil Co., Inc., Wood River, Ill., to Roxana, Ill.; **Curtis C. Balding,** purchasing agent, Max B. Miller & Co., Inc., Rockville Center, N. Y., to Ponca City, Okla.; **J. H. O'Rear,** manager Ashland Oil & Refining Co., Evansville, Ind., to Henderson, Ky.; **David H. Scott,** geologist, The Texas Co., Centralia, Wash., to Santa Barbara, Calif.; **Thomas W. Bibb, Jr.,** geologist, The Texas Co., Centralia, Wash., to Seattle; **G. H. Dunagan,** superintendent, Brinkerhoff Drilling Co., Lander, Wyo., to Casper, Wyo.; **G. M. Cook,** foreman, Ohio Oil Co., Cromwell, Okla., to Cement, Okla.; **Roger L. Messman,** superintendent, Continental Oil Co., Woodward, Okla., to Worland, Wyo.; **H. K. Herr,** foreman Kerr-McGee Industries, Inc., Okemah, Okla., to Natchitoches, La.; **Loyd Somers,** engineering, The Texas Co., Ardmore, Okla., to Marlow, Okla.

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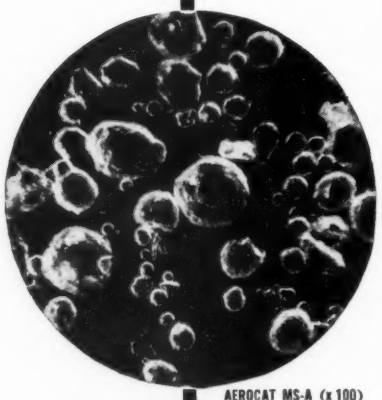
FIRST IMPROVEMENT IN SYNTHETIC CRACKING CATALYSTS



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Equipment Men in the News

Roebling Promotes Burtch and Hobbs

E. C. Low, vice president in charge of sales for John A. Roebling's Sons Co., Trenton, N. J., announces the promotion

F. S. BURTCH

W. HOBBS, JR.

of Forest S. Burtch to sales manager of the rope division, and William Hobbs, Jr., to manager of sales, aircord division. Burtch succeeds Earl N. Graf, recently resigned. Until his recent appointment, Burtch has been manager of sales for the aircord division. Hobbs has been a member of the Roebling engineering staff since 1934. Both men have traveled extensively throughout the United States as Roebling consultants.

Elmore to Handle Export Sales

R. E. ELMORE

K. W. Davis, president of Mid-Continent Supply Co. with general offices in Fort Worth, announces the opening of a New York district office at 42 Broadway, New York City, to handle Mid-Continent's export business. R. E. Elmore is district manager. He has been with the company for a number of years and is well known by operators throughout the Mid-Continent area.

Mid-Continent Supply Co. Opens Los Angeles Office

L. A. PYEATT

K. W. Davis, president of Mid-Continent Supply Co. with general offices in Fort Worth, announces the opening of a new West Coast district office, in Los Angeles, to handle Mid-Continent's West Coast and export business. L. A. Pyeatt is district manager and offices are located in the Bankers Building.

Opens Houston Office

Charles L. Chavigny, recently placed on inactive duty with the rank of lieutenant commander after 3½ years in the Navy, has opened an office in Houston. C. L. Chavigny Co. will act as sales representative of manufacturers of specialized types of processing equipment which have particular application in the chemical, oil refining and general processing industries in the Gulf Coast area. Offices are in the Sterling Building.

Companies which will be represented include: R. P. Adams Co., Inc.; American Hard Rubber Co.; American Heat Reclaiming Co.; Goslin-Birmingham Manufacturing Co., Inc.; Hardinge Co., and Hasco Valve & Machine Co.

Continental Supply Opens Store in Kansas

Continental Supply Co., with general offices in Dallas, has announced the opening of a store at Liberal, Kan. Store manager is C. A. Beil and F. E. Prosser is sales representative. The Tulsa office of The Continental Supply Co. has moved to Room 515, National Mutual Building, 619 South Main Street.

Blackman Takes Over Rochester Sales District

J. S. Blackman is the new sales representative for Oklahoma and Kansas for Rochester Ropes, Inc. Blackman has just been released from the armed forces. He will headquarter in Oklahoma City where he will have temporary offices in the Tradesmen Bank Building and will later establish a branch warehouse with complete stocks for the Oklahoma-Kansas oil and industrial trade territory.

Zimmerman Made Chief Engineer Of Bechtel Brothers McCone

G. B. ZIMMERMAN

Gordon B. Zimmerman has joined the firm of Bechtel Brothers McCone Co., as chief process engineer, according to William E. Waste, president of the engineering and construction firm with principal offices in San Francisco and Los Angeles. Zimmerman spent 15 years with Universal Oil Products Co. and has participated in a number of important advancements in the field of petroleum processing. He has written numerous articles for technical magazines and holds eight patents relating to petroleum processing and equipment.

H. K. Porter Buys American Spiral Spring Business

H. K. Porter Co., Inc., announced the purchase of the business of the American Spiral Spring & Manufacturing Co. of Pittsburgh. The new acquisition, together with the present Porter Fort Pitt Spring plant, will be operated as American-Fort Pitt Spring Division of H. K. Porter Co., Inc.

Graver Promotes Welp

Graver Tank & Manufacturing Co., Inc., East Chicago, Ind., recently announced appointment of Edward W. Welp as sales manager of water-conditioning equipment. Welp, former technical director of Graver's process equipment division, has spent 32 years with the firm in every phase of research, design, and construction of water-conditioning equipment.

Knox Elected President of Westinghouse Electric International Co.

Election of William E. Knox as president and general manager of Westinghouse Electric International Co. was recently announced. Knox, who first served as a sales clerk with the company 24 years ago, succeeds John W. White, who has resigned to become director general of Industria Electrica de Mexico, one of Mexico's largest privately owned enterprises.

Bethlehem Announces Promotions

J. G. Floyd has been promoted to district manager of the Ark-La-Tex district of Bethlehem Supply Co. He will have his

J. G. FLOYD

R. E. WILLIAMS

headquarters in the company's new store at Shreveport, La. Floyd succeeds Fred Parks who was recently promoted to resident manager at Houston.

R. E. "Peck" Williams, who joined the Bethlehem organization as assistant district manager of the Panhandle district, has been named district manager of that district by V. W. Bailey. His headquarters will be at Pampa, Tex.

Trotman Heads New Bowser, Inc., Division

J. B. Trotman of Grand Rapids has been appointed head of the new Bowser, Inc., industrial pump division. He has been identified with the pump industry for 30 years and has been for the past 6 years general sales manager of Blackmer Pump Co., Grand Rapids.

To Install Propane Air Gas Plant

A contract has been awarded to Stacey Dresser Engineering of Cleveland, division of Stacey Bros. Gas Construction Co., of Cincinnati, for design and installation of a propane-air gas plant. This plant will produce 550,000 standard cubic feet per day of 1,000-B.t.u. propane-air gas at 25 psig. The plant will be designed for a wide range of 5 to 100 per cent operation to meet local conditions.

Saville Heads Port Commission

Wilson G. Saville, senior partner in Gravity Meter Exploration Co., Houston, and former U. S. Army district engineer at Galveston, was recently sworn in as chairman of the Houston - Harris County Port Commission after his appointment by the Houston City Council and Harris County Commissioners Court.

Continental Names Store Manager

New managers have been appointed at three of The Continental Supply Co. stores, according to a company announcement.

R. W. Griffin, formerly a salesman at Shreveport, has been transferred to the Artesia (Rangely), Colo., store as manager. The Russell, Kans., store is now managed by Glen R. Pike, until which time he was a salesman with the company. W. H. Darby is now manager of the store at Winnsboro, Tex.

Evleth Made President Of Ray Control Co.

Everett B. Evleth has been named president of Ray Control Co. of Pasadena, Calif. Evleth was formerly vice president and general manager for 8½ years of Brown Instrument Co. of Philadelphia and previous to that was vice president in charge of the Middle West sales zone for Minneapolis-Honeywell Co., a company with which he was associated for 13 years. During the war, he was a member of the Industrial Instrument Industry Advisory Committee of the War Production Board.

Ward Made Vice President of American Car & Foundry

Announcement is made that Robert W. Ward has been elected a vice president of American Car & Foundry Co., and placed in charge of manufacturing. Ward was previously district manager of the ACF Huntington, W. Va., plant. He will make his headquarters in New York.

New Stores Opened

Two new stores have recently been added to The Continental Supply Co. group, according to the Continental general offices, Dallas.

One of the new locations is Lindsay, Okla., with M. M. Morstrand as store manager and operating under the supervision of W. O. Timberlake, assistant district manager at Oklahoma City.

C. A. Wade has been named manager of the new store located at Eunice, La. This point will be under the supervision of the assistant district manager at New Iberia, La., A. P. Lacey.

Forsyth Promoted by Lane-Wells

VAL L. FORSYTH

Val L. Forsyth, field service engineer for Lane-Wells, has been promoted to assistant chief engineer according to an announcement by N. L. Dorn, chief engineer and vice president of the company. Forsyth, widely known in petroleum engineering circles, has been with Lane-Wells since October of 1938. He has been identified with the development and testing of many of the company's recent improvements in equipment and service technique, particularly for gun perforating.

Conners and Fosnot Join Graver

Harold C. Conners and Harold R. Fosnot have been named by the Graver Tank & Manufacturing Co. to head the firm's Chicago area sales activities. Both war veterans, Conners will handle steel plate sales while Fosnot will represent the Graver Process Equipment Division, specializing in water conditioning equipment.

McColl Made President of Beaumont Iron Works

The board of directors of Beaumont Iron Works Co., subsidiary of the American Locomotive Co. in Beaumont, Tex., has announced the appointment of R. B. McColl as president in addition to his duties as chairman, and James F. Baldwin as manager. McColl is president of the American Locomotive Co. with offices in New York City. The appointments, effective July 1, followed the retirement of A. I. Brainard, former Beaumont president. Baldwin had long been associated with American Locomotive before he joined the Milton Manufacturing Co. of Milton, Pa., which he is leaving to take over the Beaumont post.

Patch Made Western Sales Manager for Joshua Hendy

C. A. PATCH

Clifford A. Patch has been appointed sales manager, western division of Joshua Hendy Iron Works, succeeding Clarence Jensky, resigned, according to announcement made by Harry C. Gunetti, general manager. Patch has been successively assistant chief engineer, turbine sales manager, and chief project engineer at Hendy. He will supervise sales of all products made at the company's Sunnyvale and Torrance, Calif., plants—diesels, turbines, gears, valves and custom built machinery.

King Takes Over Tulsa Sales Area for Midwestern

Midwestern Engine & Equipment Co., Inc., announces the appointment of Clyde A. King, Jr., as sales engineer for Continental Red Seal engines in the Tulsa area. King served for the past 2 years as an officer in the U. S. Navy PT Patrol.

Cameron Announces Formation of Subsidiary California Corporation

Cameron Iron Works, Inc., Houston, manufacturer of drilling and completion control equipment and other specialties, has announced the formation of a California corporation to be known as Cameron Iron Works of California. According to Edmond L. Lorehn, vice president of the new corporation, the subsidiary company was organized for the purpose of more adequately serving Pacific Coast operators through all bona fide supply stores. At present, the new corporation will not engage in the manufacture of Cameron products in California. Administrative and warehousing facilities will be established in the Los Angeles Basin area and will be under the supervision of H. G. (Jeff) Musolf. For the present Musolf has offices at 1980 Cedar Avenue, Long Beach, Calif.

Flanders in South America

George S. Flanders, export sales engineer for Lane-Wells Co., left New York July 13 on an extended trip through Central and South America. Flanders' trip will last about 3 months and will take him into most of the oil fields and production centers of the area.

Dowell Announces Changes In Sales Department

R. D. Shaw, general sales manager for Dowell Inc., Tulsa, has announced three promotions in the sales staff, necessitated because of expanding activities. H. W. Ross, formerly assistant sales manager, assumes the duties of sales manager in charge of the industrial division. He will continue, however, to maintain certain activities in the petroleum division. M. L. Stirling, formerly assistant sales manager, becomes sales manager of the petroleum division and will direct sales of Dowell's oil-well acidizing and other oil-field services. Guy Williams, who has been in Dowell's sales department for many years, will become assistant sales manager in charge of product sales, and also will be active in general sales promotion in both the industrial and petroleum divisions.

H. W. ROSS

M. L. STIRLING

GUY WILLIAMS

Schroeder Heads Parker Pacific Division

Appointment of Harvey E. Schroeder, formerly district sales manager in Los Angeles for The Parker Appliance Co., to be manager of a newly created Pacific Division of the company, is announced by S. B. Taylor, president. Schroeder succeeds Paul Locklin, who has resigned as manager of Parker's Los Angeles manufacturing division which, with the company's Pacific sales district, is being combined into a single West Coast organization.

E. F. Liebrecht Elected Kellogg Vice President

E. F. LIEBRECHT

H. R. Austin, president of the M. W. Kellogg Co., petroleum engineers of Jersey City and New York, announces that E. F. Liebrecht has been elected a vice president of the company. Long associated with oil refining processes and developments Liebrecht is one of the supporters and exponents of the open license system. He has been general patent attorney for the Kellogg company since 1940.

Parker Promotes D. A. Cameron

Appointment of D. A. Cameron as assistant general sales manager of the Parker Appliance Co., 17325 Euclid Avenue, is announced by Dan W. Holmes, general sales manager of the company.